

Waste/Source Reduction

Part 1: Setting Official Policy

Communities Controlling Toxics

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Local Government Commission
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Project Funded by: The San Francisco Foundation, The L.J. and Mary C. Skaggs Foundation

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This is one of a series of policy initiatives produced by the Communities Controlling
Toxics Project, a program of the Local Government Commission.

The Local Government Commission is a nonprofit, nonpartisan, membership organization
of local elected leaders interested in finding community level solutions to problems of
state and federal significance.

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THIS IS THE FIRST IN A FIVE PART SERIES
OF DOCUMENTS TO BE PRODUCED FOR LOCAL ELECTED OFFICIALS BY THE
COMMUNITIES CONTROLLING TOXICS PROJECT ON WASTE/SOURCE REDUCTION.

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WASTE/SOURCE REDUCTION: A KEY TO PREVENTION

Part 1: Fact Sheet on Setting Official Policy

WHAT IS WASTE REDUCTION?

Waste reduction means reducing the total volume or toxicity of hazardous wastes that otherwise would be emitted into the air, put into sewers and/or sent to some form of land disposal.

In order of priority, waste reduction can be accomplished through:

1. Reducing wastes at their source (Source Reduction)
2. Recovering and recycling hazardous wastes for reuse
3. Treating hazardous waste, such as solidifying or neutralizing it.

WHAT IS SOURCE REDUCTION?

Of all the waste reduction strategies, source reduction has the most potential for effectively reducing hazardous wastes. The only way to begin to prevent the toxic contamination of the environment is to reduce the use of hazardous substances and the generation of hazardous waste at the source of production.

Because source reduction is a form of increased chemical efficiency, the term "chemical conservation" could be used as a synonym.

Source reduction can include such strategies as:

1. Shifting to a product where the manufacturing process requires the production of less hazardous waste.
2. Substituting a less hazardous substance as part of the production process.
3. Conserving the use of hazardous substances by using more efficient housekeeping practices.
4. Designing new processes and equipment that result in less waste production.

WHY IS WASTE/SOURCE REDUCTION IMPORTANT?

The chemical contamination of our environment continues to worsen because greater and greater amounts of hazardous wastes continue to be produced and accumulated. Hazardous waste "clean up" often means that dangerous chemicals are being transferred from one place or one medium to another. We dispose of wastes by putting them in a landfill, but the groundwater below becomes contaminated. We aerate contaminated groundwater only to find the pollutant now in the air. We discharge wastewater containing toxics into our sewers where it eventually makes its way into our rivers, creeks and bays. There is only one real solution. That is to reduce the amount of hazardous wastes we produce, preferably at the very source.

IS WASTE/SOURCE REDUCTION FEASIBLE?

Yes! Cost effective technologies and practices are available, but many industries are simply not aware of them. These technologies and practices provide economic advantages as well, helping businesses reduce their waste disposal costs, long term liability, and chemical purchasing costs.

The Ventura County Environmental Health Department provides technical assistance on waste reduction strategies to industries in their county. This program has achieved vast reduction in hazardous wastes by letting businesses know of alternatives to landfill disposal. Their achievements include the following:

- A 100 percent reduction in land-disposal for wastes generated by an automobile import company. The county connected the corporation with recyclers who recycle all the wastes formerly dumped into landfills.
- A 75 percent reduction in the volume of waste produced by an oil company. The county pointed out how a water conservation program could reduce the volume of contaminated water that was being produced.
- A 90 percent reduction in the amount of hazardous waste sent by Pure Gro Pesticide formulators to landfill. The county recommended the installation of an activated carbon absorption unit to decontaminate rinse waters.

TRENDS IN STATE AND FEDERAL LAW

There is a trend in state and federal law away from disposing of toxic wastes in landfills. Coupled with leadership from the local level, these trends could provide significant incentive for waste and source reduction.

- California State regulations currently ban specified concentrations of some substances from land disposal. (CA Administrative Code, Title 22, Division 4, Chapter 30, Article 15, Section 66900). These bans are also included in Federal Resource Conservation and Recovery Act (RCRA) 1984 amendments.
- AB 2948 (Tanner, 1986; Hazardous Waste Management and Facility Siting) prohibits the disposal of liquids in landfills as of January 1, 1987 and prohibits the disposal of untreated waste in landfills after January 1, 1990.
- Under federal law, hazardous waste generators are subject to joint and several liability for the hazardous wastes they produce, even after those wastes are disposed of in an "approved" landfill.
- The Federal Resource Conservation and Recovery Act (RCRA) requires waste generators to certify that they are pursuing waste minimization.

WHAT CAN LOCAL GOVERNMENTS DO TO ENCOURAGE WASTE/SOURCE REDUCTION?

There are a series of steps local governments can take:

1. Set Official Policy (See Model Resolution - Attached)

A general statement promoting the goal of waste/source reduction need not wait for the details of an implementation program to be developed. Several states have already enacted waste reduction policies including Minnesota, Washington, Texas, North Carolina, Michigan and Louisiana.

2. Assemble Data

An effective waste/source reduction strategy must be based on specific information about the waste stream in the community. Waste reduction strategies require knowledge of which specific hazardous wastes are being generated and in what amounts.

The pending implementation of AB 2185 (M. Waters, 1985), the statewide "Community Right To Know" law offers an excellent mechanism by which to gather needed additional information.

3. Provide Technical Assistance to Industry (See Attachment B)

A survey done in Ventura County revealed that a major impediment to the implementation of waste/source reduction was an overwhelming lack of information.

Local governments can disseminate information to generators, engineers and plant operators on waste reduction techniques and alternatives; work with individual firms to implement waste reduction methodologies; encourage industries to share information about waste reduction successes; and make certain that all new industries utilize the best available technologies and practices in order to reduce generation of hazardous waste.

4. Provide Financing Options to Industry (See Attachment C)

Small and medium size businesses often have inadequate access to the financial resources necessary for capital intensive improvements. A proposal prepared for Los Angeles County outlines a strategy for financing waste reduction improvements for small businesses and allowing loans to be paid back out of cost savings. Engineering and technical assistance costs can be covered as part of the loan in addition to capital improvements.

5. Enact an Ordinance Requiring Waste/Source Reduction Plans (See Attachment D)

Contra Costa County has established a target of reducing by 25 percent the volume and toxicity of hazardous waste committed to land disposal by 1990. In order to achieve this goal, the Board of Supervisors is requiring all industries in the County to submit hazardous waste reduction plans.

Santa Cruz County requires industries to document that they are using "the best available control technologies or changes in process and manufacturing strategies to eliminate, minimize or reduce handling of the hazardous material."

WHY ACT NOW?

The Tanner Bill (AB 2948, 1986) which should be signed into law in September of 1986, provides that counties throughout California make plans for the management and ultimate disposition of all the hazardous wastes generated within their boundaries.

Local elected officials should take the initiative now to make sure that the emphasis is placed on how to reduce wastes rather than on siting new hazardous waste facilities. Adopting the attached resolution now would be an important first step.

WHAT IS THE LOCAL GOVERNMENT COMMISSION'S COMMUNITIES CONTROLLING TOXICS PROJECT DOING?

This is the first in a five part series of documents to be produced for local elected officials on waste/source reduction by the Communities Controlling Toxics Project. Forthcoming documents will deal with data collection, providing technical assistance to industry, financing options, and ordinances that require waste/source reduction plans.

The first step in the process of creating a business plan is to conduct a market analysis. This involves researching the industry, identifying potential customers, and understanding the competitive landscape. The next step is to develop a marketing strategy, which outlines how the business will attract and retain customers. This includes determining the target market, selecting appropriate marketing channels, and setting a budget for marketing activities.

Once the marketing strategy is in place, the next step is to develop a financial plan. This involves estimating the costs of the business and projecting the revenue. The financial plan should include a detailed budget, a cash flow statement, and a break-even analysis. This information is essential for determining the viability of the business and for securing financing.

The final step in the process is to write the business plan itself. This document should provide a comprehensive overview of the business, including the market analysis, marketing strategy, financial plan, and management team. The business plan is a critical tool for communicating the business's vision and goals to potential investors and lenders.

By following these steps, entrepreneurs can create a business plan that provides a clear roadmap for their business and increases their chances of success.

There are several key factors that can influence the success of a business plan. First, the quality of the market analysis is crucial. If the entrepreneur fails to accurately identify the target market or understand the competition, the business plan will be flawed. Second, the marketing strategy must be realistic and achievable. Overly ambitious marketing goals can lead to financial strain and failure.

Third, the financial plan must be sound. Entrepreneurs should carefully estimate costs and project revenue, taking into account all potential risks and uncertainties. A realistic financial plan is essential for determining the business's viability and for securing financing. Finally, the business plan itself must be well-written and clearly communicate the business's vision and goals.

By addressing these key factors, entrepreneurs can create a business plan that is both realistic and compelling, increasing their chances of success.

WHY SET GOALS?

Setting goals is a critical component of any successful business plan. Goals provide a clear direction for the business and help entrepreneurs focus their efforts. They also serve as a benchmark for measuring progress and success. Without goals, a business plan is incomplete and lacks the necessary structure and focus.

There are several benefits to setting goals. First, goals provide a sense of purpose and motivation. When entrepreneurs have clear goals, they are more likely to stay focused and committed to their business. Second, goals help entrepreneurs prioritize their tasks and allocate resources effectively. By knowing what they want to achieve, they can focus on the most important tasks and avoid distractions.

Finally, goals provide a framework for evaluating the business's performance. By comparing actual results to the goals set in the business plan, entrepreneurs can identify areas of strength and weakness. This information is essential for making adjustments and improving the business's performance. In summary, setting goals is a fundamental step in the business planning process, and it is essential for the success of any business.

MODEL RESOLUTION

In the matter of establishing
Waste/Source Reduction as a Priority
in the Use and Management of
Hazardous Materials in the
City/County of _____.

WHEREAS the presence of hazardous substances and hazardous wastes in the City/County of _____ creates a potential threat to public health and safety; and

WHEREAS there are cost-effective practices and technologies now readily available by which to significantly reduce the amount and toxicity of hazardous materials initially used as well as imposed on society's waste management capabilities; and

WHEREAS waste/source reduction benefits chemical users by reducing waste disposal fees and long term liability, as well as the costs of chemical feedstock materials; and

WHEREAS there is a trend in state and federal law away from disposing of hazardous wastes in landfills, creating a serious need for alternatives; and

WHEREAS with the passage of AB 2948, all cities and counties will be authorized to adopt plans for the management and ultimate disposition of all hazardous wastes generated within their boundaries,

NOW THEREFORE BE IT RESOLVED that it is the policy of the City/County of _____ to encourage and promote practices and technologies that will, in order of priority:

- First, reduce the use of hazardous substances and the generation of hazardous wastes at their source;
- Second, recover and recycle the remaining wastes for reuse;
- Third, treat those wastes not amenable to source reduction or recycling so that the environment and community health are not threatened by their ultimate release or disposal.

BE IT FURTHER RESOLVED that a copy of this resolution be forwarded to the appropriate entity in charge of implementation of AB 2948 for the City/County of _____.

REPORT SUMMARY

In the matter of _____
_____ has been identified as a _____
in the _____ of _____
_____ in the _____ of _____
_____.

_____ has been identified as a _____
in the _____ of _____
_____ and _____.

_____ has been identified as a _____
in the _____ of _____
_____ and _____.

_____ has been identified as a _____
in the _____ of _____
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in the _____ of _____
_____ and _____.

_____ has been identified as a _____
in the _____ of _____
_____ and _____.

_____ has been identified as a _____
in the _____ of _____
_____ and _____.

1. First, _____ and _____
_____ of _____.

2. Second, _____ and _____
_____ of _____.

3. Third, _____ and _____
_____ of _____.

4. Fourth, _____ and _____
_____ of _____.

LIST OF ATTACHMENTS

Attachment A - Key Contacts

Attachment B - Progress Report on Ventura County Hazardous Waste
Volume Reduction and Alternative Technology Program

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by the Los Angeles County Economic Development
Corporation

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Cruz Counties

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Environmental Defense Fund, David Roe and Shelly Guyer.

ATTACHMENT A

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Progress Report on

**Ventura County Hazardous Waste Volume
Reduction and Alternative Technology
Program**

**An assessment of hazardous waste generation and reduction
activities in Ventura County**

April, 1986

**Ventura County Environmental Health Department
800 S. Victoria Ave.
Ventura, Ca. 93009
(805) 654-2813**

Debra Hanlan

VENTURA COUNTY HAZARDOUS WASTE VOLUME REDUCTION AND ALTERNATIVE
TECHNOLOGY PROGRAM

An Assessment for Ventura County

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Summary

Ventura County's industries produce over 38,000 tons of hazardous waste annually, of which approximately 85% was disposed of in landfills in 1985. In order to reduce this dependency on land disposal and to project future treatment and disposal needs for industries in the County, Environmental Health conducted waste audits and surveys of companies using land disposal in order to:

1. determine the exact chemical composition, quantities, and disposition of wastes produced;
2. determine if these companies were expecting to make major changes in waste stream generation;
3. ensure that recycling, reuse, and waste reduction methods were employed when possible;
4. identify major barriers to on-site volume reduction or treatment;
5. project future treatment and disposal needs of industries within the County;
6. assist each company in the development of a Volume Reduction Plan as required by RCRA.

Analysis of waste generation patterns demonstrated that in 1985, 75 companies in Ventura County produced 95% of all the County's hazardous waste that was disposed of in landfills. Industries disposed of 76% of the total hazardous waste produced at Casmalia Resources in 1985. The major waste streams were oil field production wastes, acids, and aqueous and alkaline solutions that contained between 90 and 98% water.

A questionnaire was sent to the 75 companies relying on land disposal to determine if these industries plan to make any major changes in waste stream generation. Projections for future countywide hazardous waste management needs were made from the results of the questionnaire.

The results show that approximately one-half of the 75 major generators have found alternatives to land disposal for their hazardous wastes. Hazardous waste generation is projected to be 30 to 40 percent less in 1986 as compared to 1985. This projection does not include contaminated soil from hazardous waste sites or wastes from new industry. This amount can be further reduced by treating all liquid wastes and dewatering sludges.

Ventura County generators produce less than 2% of the Southern California Area Government regional waste. Ventura's waste profile is also substantially different from the regional waste profile, indicating regional treatment and disposal needs will not meet local generator requirements. Generators may still rely on Casmalia Resources for treatment and disposal of hazardous waste however, it appears that the quantities of liquid hazardous waste will be substantially reduced by on-site treatment methods.

The questionnaire results revealed that the major barriers to hazardous waste volume reduction are lack of information, financial constraints, and regulatory impediments. Smaller firms, especially, are faced with problems such as the lack of technical personnel to investigate waste reduction and capital costs for treatment technologies.

The immediate results of several of the waste audits conducted by Environmental Health provided solutions for simple, available, and low-cost methods to reduce or eliminate all generation of hazardous wastes. Industries were found to be disposing of recyclable wastes, manifesting non-hazardous wastes, and unnecessarily generating wastes. The first step in volume reduction typically involves relatively unsophisticated technical approaches such as good housekeeping, separation of wastes, and water conservation. Although technically simple, these steps have the potential for achieving substantial waste reductions. It was also found that attitudes toward change, regulatory issues, costs of land disposal, and availability of information about existing waste reduction methodologies were significant in affecting corporate decisions about waste generation.

The results of this study further conclude that the major portions of industrial effort in the County is now in the initial phase of hazardous waste reduction. Development of hazardous waste reduction efforts can be expected to improve over time as the major obstacles to volume reduction are addressed.

In order to further reduce waste volumes, on a Countywide basis, Environmental Health will continue to disseminate information to generators, engineers, and plant operators on waste reduction techniques and alternatives. Individual firms will be targeted to implement waste reduction practices and new technologies. Financial resources for companies needing more capital intensive technologies will be sought. Industries will also be encouraged to share information about waste reduction successes. Finally, the Department will assist in overcoming the regulatory barriers that impede waste reduction efforts in order to provide companies with the most technically feasible and environmentally sound waste treatment methods.

VENTURA COUNTY HAZARDOUS WASTE VOLUME REDUCTION/ ALTERNATIVE TECHNOLOGY PROGRAM

An Assessment for Ventura County

Ventura County Environmental Health Department, in 1985, began a program to assist hazardous waste generators reduce their dependency on land disposal. In order to accomplish this, information from the State Hazardous Waste Manifest Information System was analyzed to identify the types, quantities and disposition of hazardous wastes produced by companies in Ventura County. All generators who currently rely on land disposal were also surveyed to determine future waste management plans. Waste audits were conducted at each site to determine if alternative waste handling methods were feasible and to ensure that reuse, recycling and waste reduction methods were employed when possible.

This report summarizes these findings and projects future hazardous waste generation and disposal patterns for existing industries in Ventura County. It also identifies barriers to volume reduction and provides a framework for future local hazardous waste alternative technology/volume reduction program objectives.

Introduction

Ventura County industries generate over 38,000 tons of hazardous waste annually, of which a substantial amount is disposed of in landfills. As the problems with land disposal of hazardous waste have become more evident, State and Federal laws have increased the regulation of these practices and generators have begun to explore alternative waste management practices.

The Federal Hazardous and Solid Waste Amendments of 1984 provide for many new regulations intended to reduce the amounts of hazardous waste now being disposed of in landfills. Congress has recognized that land disposal technology cannot guarantee perpetual containment of all chemical wastes and has set forth a series of deadlines for making land disposal restriction determinations. Congress used the "California List of Restricted Wastes" as a model for decision making by the United States Environmental Protection Agency.

California law now prohibits the land disposal of recyclable wastes, liquids in drums, bulk liquids, and liquid hazardous wastes containing certain concentrations of free cyanides, arsenic, cadmium, selenium, chrome, lead, mercury, acids with a

pH of less than 2, caustics with a pH of 12.5 or greater and halogenated organics at 1,000 ppm or greater. No person shall use land disposal for these wastes after the established date.

Table 1
CALIFORNIA LAND DISPOSAL RESTRICTIONS AND SCHEDULE

June 1, 1983: Free cyanides at 1000 mg/l or greater,

Jan. 1, 1984:

a. liquids containing dissolved metals at concentrations of;

Arsenic	500 mg/l
Cadmium	100 mg/l
Chromium VI	500 mg/l
Lead	500 mg/l
Mercury	20 mg/l
Nickle	134 mg/l
Selenium	100 mg/l
Thallium	130 mg/l

b. acids having a pH of less than or equal to 2,

c. caustics having a pH of 12.5 or greater,

d. liquids with PCB's greater than or equal to 50 mg/l.

Jan. 1, 1985: Liquid waste containing halogenated organic compounds at 1,000 mg/l or greater;

May 8, 1985: Bulk hazardous liquid wastes; (RCRA Mandate)

July 8, 1987: Organic sludges and solids containing halogenated compounds at 1,000 mg/kg or greater.

Due to the closure of many hazardous waste disposal sites, the limited capacity of existing off-site disposal facilities, and the increased cost and liabilities associated with transportation and land disposal, industries are seeking alternative solutions for hazardous wastes. Generators are also required by Section 3002 of the 1984 RCRA Amendments to develop Volume Reduction Plans and to certify on each manifest that they have done everything economically possible to reduce the amount of waste produced. Each generator is required to report to EPA and the State Department of Health Services every two years on the actions they have undertaken to reduce the volume and toxicity of waste generated and report the changes actually achieved during the year.

Purpose and Methodology

As a result of these new requirements and the inavailability of disposal options for hazardous waste generators, the Ventura County Environmental Health Department began a program to encourage companies to use waste reduction technologies and alternative waste management practices.

The purpose of this initial study was to identify types, quantities and disposition of hazardous wastes produced by county industries and through a survey and questionnaire, determine if these industries expect to make any major changes in waste stream generation. This study also provides the framework for a local alternative technology program by identifying barriers to volume reduction and on-site treatment, and by projecting future disposal and treatment needs.

Data obtained from the Department of Health Services Manifest Information System from 1982 through 1985 was analyzed to determine waste generation and disposal patterns in Ventura County.

In order to project future generation patterns for industries in Ventura County, a questionnaire was sent to all companies that rely on land disposal for hazardous wastes. Seventy-five questionnaires were mailed in December, 1985. By January 20, 1986 seventy-three questionnaires had been completed and returned to Environmental Health.

Environmental Health personnel conducted approximately 50 waste audits at industrial companies and made recommendations on recycling, treatment and handling alternatives that resulted in immediate volume reduction for many.

Results

Hazardous Waste Generation and Disposal Patterns For Ventura County

There are 1,116 companies in Ventura County that generate hazardous waste. Of these, 1,038 companies recycle 5,000 tons of hazardous waste at off-site facilities or dispose of very small quantities once a year or less. It was discovered that a relatively small number of generators, i.e., 75, contributed to 95% of all of the wastes that were shipped from Ventura County in 1985 for land disposal.

Industries in Ventura County, as shown in Table II, produced over 54,000 tons of hazardous waste in 1984 and over 38,000 tons in 1985. Oil field production wastes such as drilling muds and tank

bottoms account for 30% of the total waste stream in the county. Figure A shows the percent of waste, by category, produced in Ventura County in 1985.

The majority of the acid waste, sludges and gas scrubber waste were also produced by the oil and gas extraction industry. Other major waste streams from various industry groups include acids, 16%; aqueous solution, 15%; alkaline wastes, 10%; and solvents, 9%.

Southern California Area Government (SCAG) regional waste stream production is over 1 million tons per year. Major wastes are acids, metal sludges, alkaline solutions, pesticide wastes and wastewaters, aqueous solutions and oily wastes. Figures B and C show by percent, types of waste produced in Ventura County compared to the SCAG Region and State waste patterns. Ventura County, in 1985, produced less than 3% of the total regional waste and less than 2% of the total State waste. Comparison of Ventura County's unique waste characteristics with Regional and State patterns are important to the development of a County Hazardous Waste Management Plan.

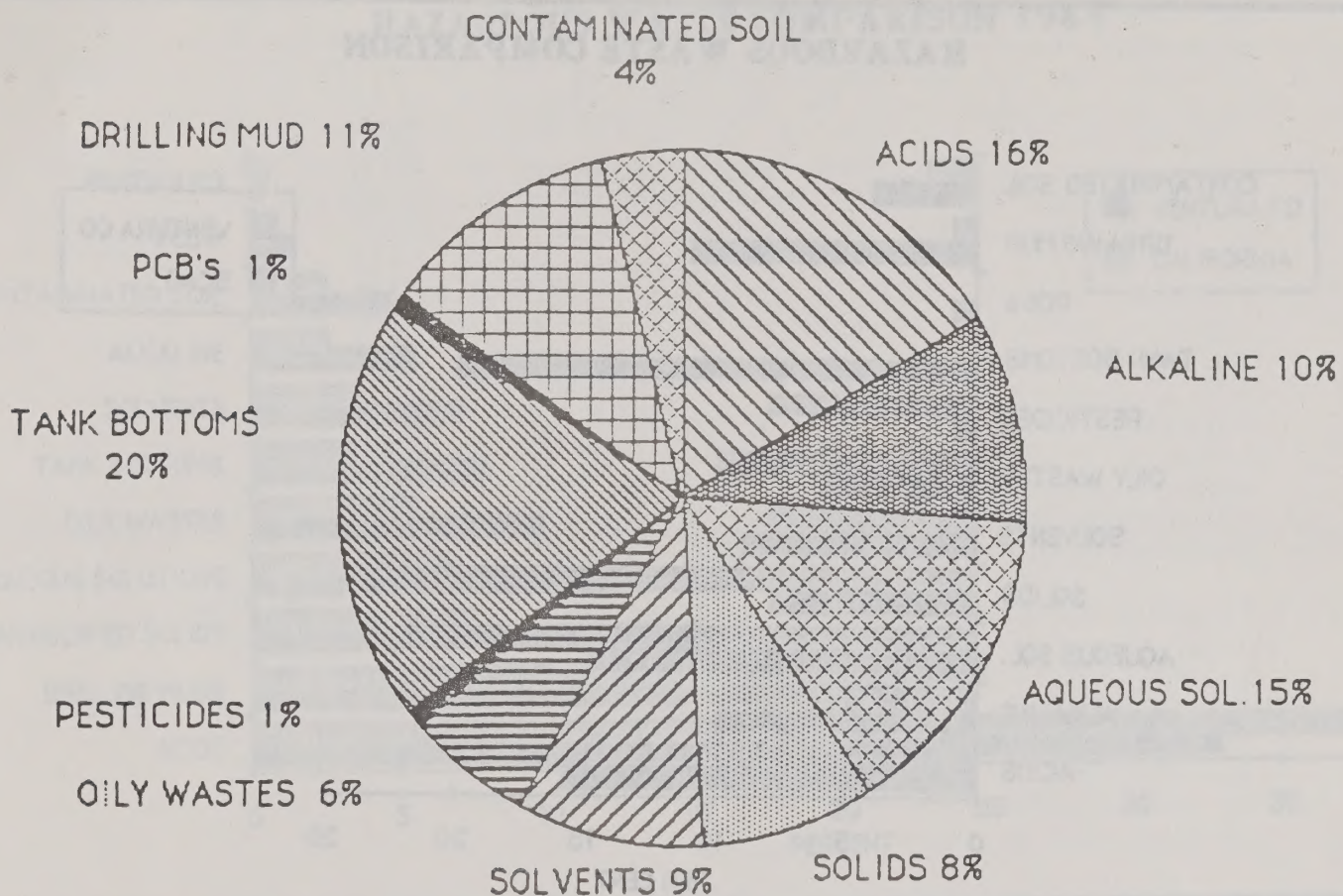
Table II
PERCENT OF HAZARDOUS WASTE
GENERATED BY CATEGORY

Waste Category	1984*	1985*	SCAG	1984 Calif.
Acids	33.1	16.0	20.0	6.7
Alkaline	5.6	10.0	5.0	4.9
Aqueous Solutions	12.6	15.0	22.0	39.5
Unspecified Solid	15.3	8.0	24.0	24.9
Solvents	7.3	9.0	8.0	3.7
Oily Wastes	10.0	6.0	10.0	5.7
Pesticides	0.5	1.0	8.5	0.7
Tank Bottoms	8.0	20.0	0.0	2.7
PCB's	1.5	1.0	0.5	0.9
Drilling Muds	22.1	11.0	1.5	2.6
Contaminated Soil	5.0	4.0	2.5	7.7
Percent	100	100	100	100
TOTAL TONS	54,070.6	38,810.9	1 million	2.7 million

*From Manifests originating in Ventura County

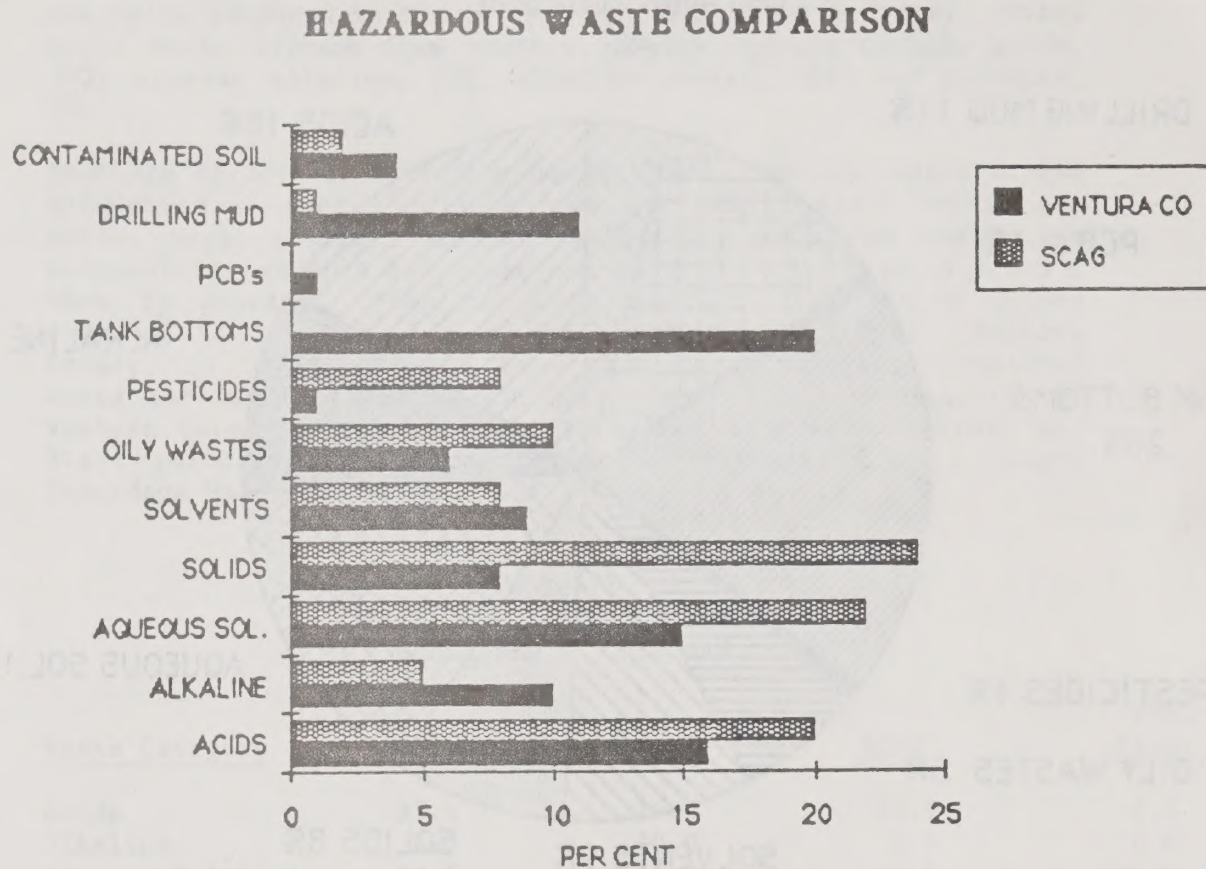
Figure A

1985 VENTURA COUNTY HAZARDOUS WASTE



Percent of hazardous waste
generated by companies in
Ventura in 1985

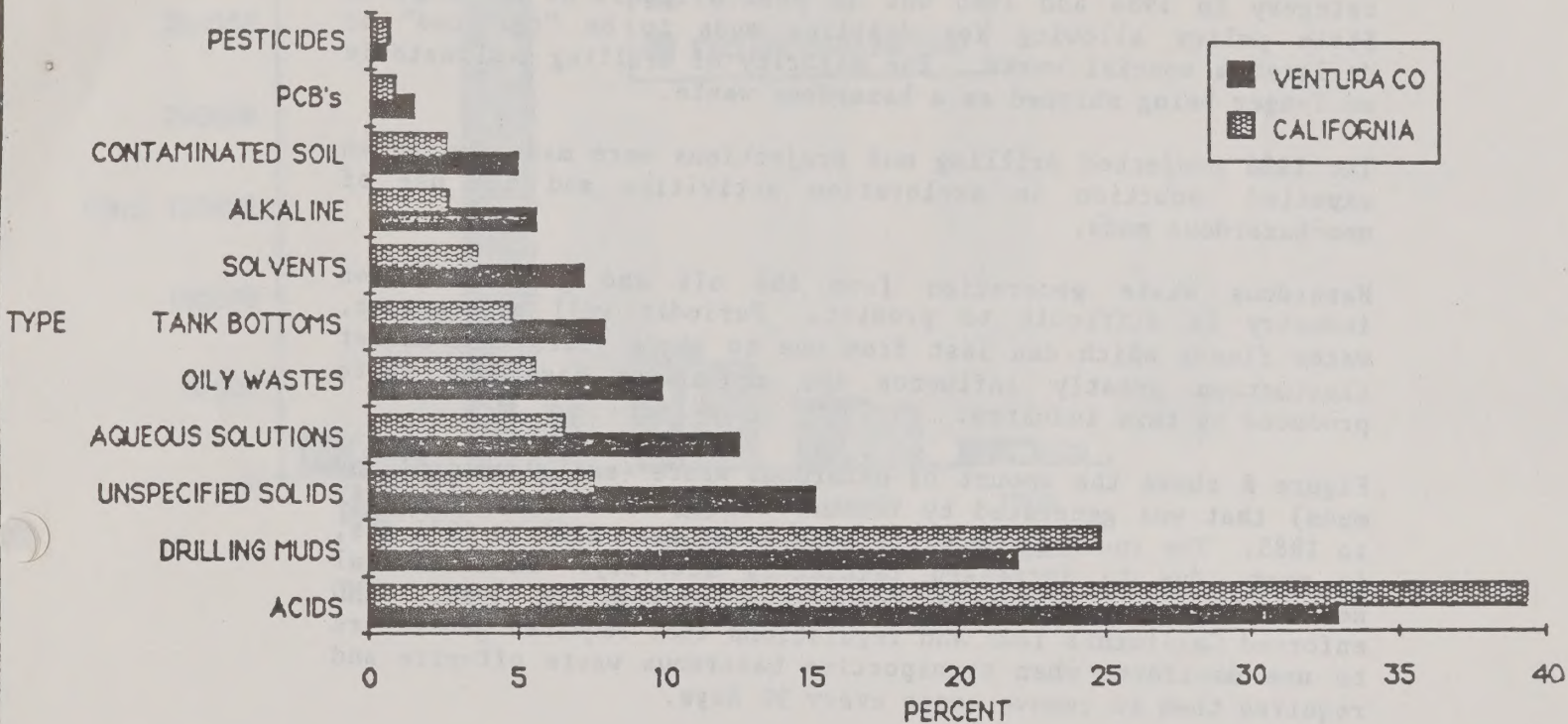
Figure B



Percent of hazardous waste generated in Ventura County in 1985 compared with that of the Southern California area government region waste generation (1984). Ventura County's major waste streams are tank bottoms, acids, drilling muds, aqueous and alkaline solutions. SCAG regional wastes are predominantly hazardous solid wastes, aqueous solutions, acids, and pesticide waste waters.

Figure C

HAZARDOUS WASTE COMPARISON 1984



Percent of hazardous waste produced in Ventura County compared to State patterns (1984).

Figures D and E display the quantities of hazardous waste generated by Ventura County industries from 1982 to 1985. Figure D compares total hazardous waste produced to total excluding the drilling mud category.

The dramatic increase in drilling mud generation in 1983 was primarily associated with an increase in offshore drilling activity and the manifesting of drilling muds as a hazardous waste by oil companies. The decline in the volume of this waste category in 1984 and 1985 was in part a result of a change in State policy allowing for drilling muds to be "delisted" or declared a special waste. The majority of drilling mud waste is no longer being shipped as a hazardous waste.

The 1986 projected drilling mud projections were made due to an expected reduction in exploration activities and the use of non-hazardous muds.

Hazardous waste generation from the oil and gas extraction industry is difficult to predict. Periodic well maintenance, water floods which can last from one to three years, and market fluctuation greatly influence the amount of hazardous waste produced by this industry.

Figure E shows the amount of hazardous waste (excluding drilling muds) that was generated by Ventura County industries from 1982 to 1985. The increase in waste generation from 1982 to 1984 was, in part, due to increased regulatory activity. Environmental Health began a generator inspection program in 1982. EHD enforced California laws and regulations that required generators to use manifests when transporting hazardous waste off-site and required them to remove waste every 90 days.

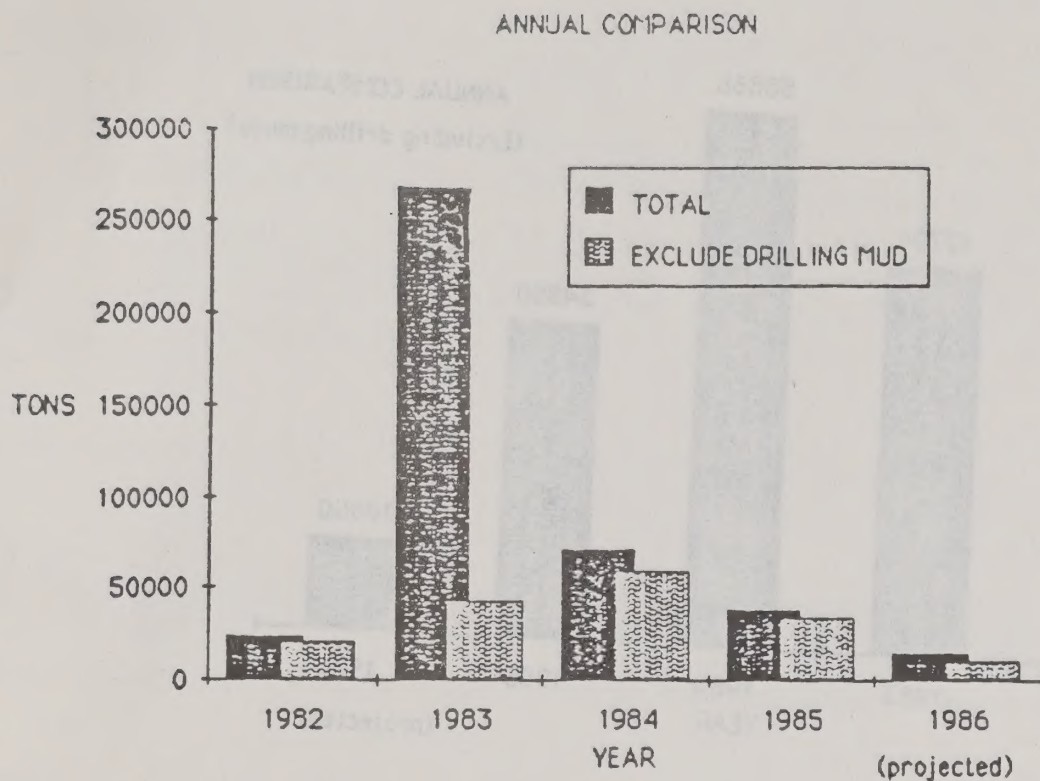
Prior to the inspection program, many generators were accumulating large quantities of hazardous waste on-site and were illegally disposing of wastes in sewers, storm drains and unlined surface lagoons. No single industry or increase in industrial activity was determined to be associated with the increased waste production from 1982 to 1984.

The decline in hazardous waste generation in 1985 is anticipated to continue assuming there are no significant changes in processes by Ventura County industries or the siting of a large quantity generator in this area. Contaminated soil resulting from hazardous waste sites and underground tank leaks will, however, be a significant waste stream in the future.

Waste Disposition

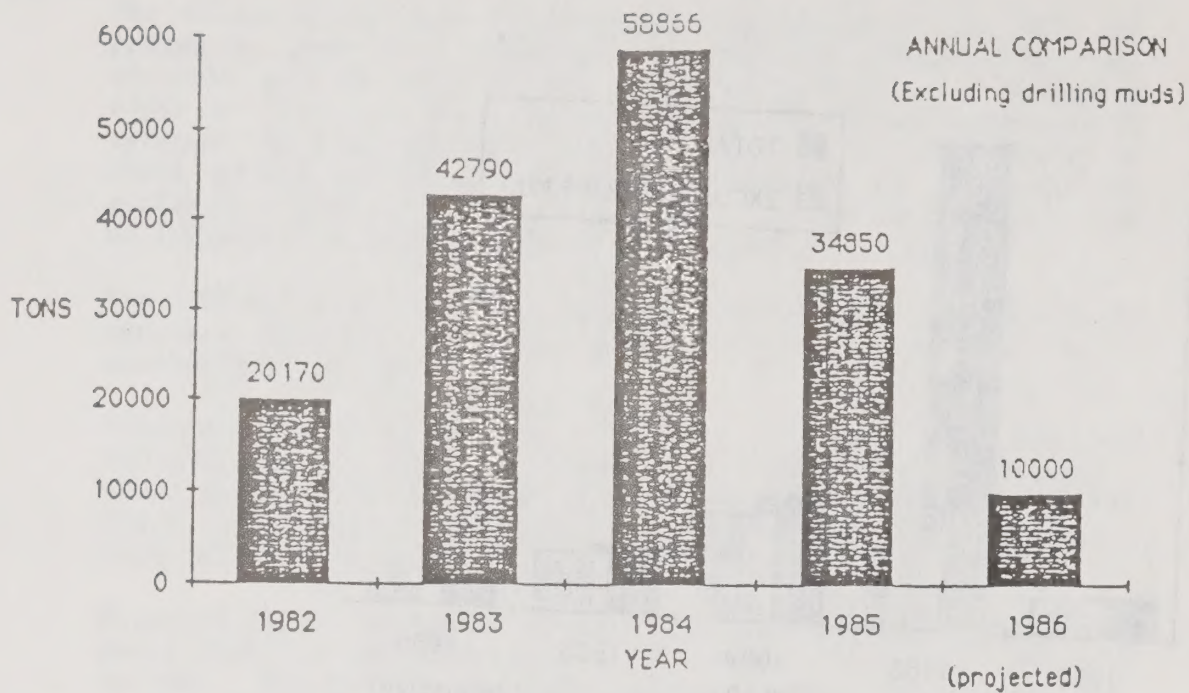
Approximately 76% of wastes generated by companies in Ventura County in 1984 were disposed of at Casmalia Resources. Kettleman Hills Disposal facility received 9% of the county's wastes and

Figure D



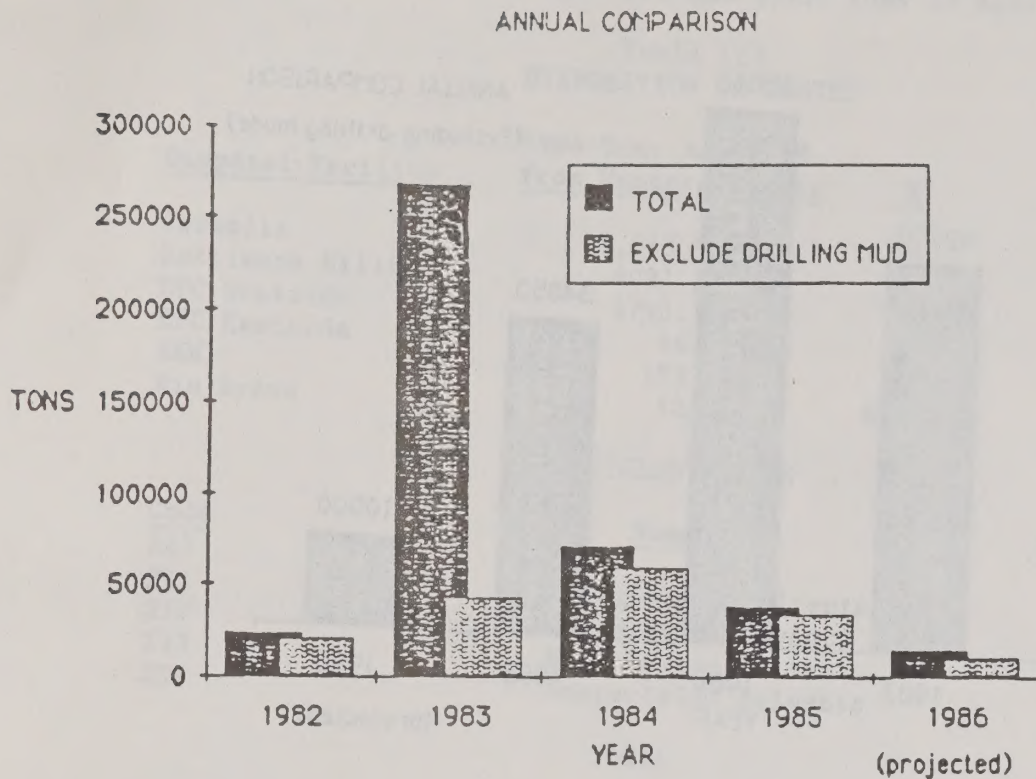
Annual comparison of tons of hazardous waste produced in Ventura County from 1982 to 1985. Graph compares the total tonnages produced with total tonnage excluding drilling mud. In 1983, 260,000 tons of drilling mud were shipped, as a hazardous waste, from Ventura County.

Figure E



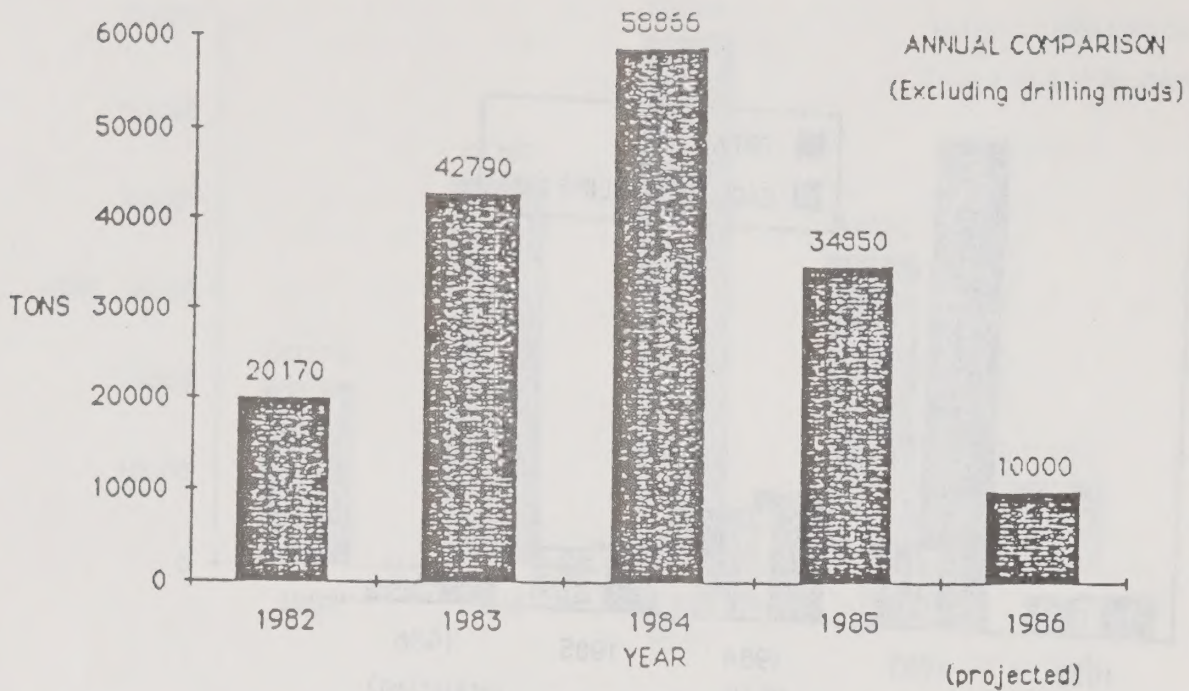
Annual comparison of hazardous waste produced in Ventura County (excluding drilling mud). The 1986 projections were made from the results of a questionnaire administered to generators. This projection reflects anticipated waste production from generators and does not include wastes that may result from hazardous waste site clean ups.

Figure D



Annual comparison of tons of hazardous waste produced in Ventura County from 1982 to 1985. Graph compares the total tonnages produced with total tonnage excluding drilling mud. In 1983, 260,000 tons of drilling mud were shipped, as a hazardous waste, from Ventura County.

Figure E



Annual comparison of hazardous waste produced in Ventura County (excluding drilling mud). The 1986 projections were made from the results of a questionnaire administered to generators. This projection reflects anticipated waste production from generators and does not include wastes that may result from hazardous waste site clean ups.

EPC Westside received 9%. Approximately 12% of total wastes produced were sent to off-site recyclers. Recycled wastes include 3,200 tons of used oil and 1,150 tons of solvent wastes.

Table III
DISPOSITION OF WASTES

<u>Disposal Facility</u>	<u>1984 Tons Received from Ventura County</u>	<u>%</u>	<u>Number of Manifests</u>
Casmalia	35,883.9	76	2392
Kettleman Hills	4091.3	9	287
EPC Westside	3799.1	8	247
EPC Eastside	447	1	38
BKK	1533	3	121
Rio Bravo	122	0.5	7

RECYCLED WASTES

<u>Code</u>	<u>Name</u>	<u>Tons/Year</u>
221	Oil	3,200
211	Halogenated Solvents	301
212	Oxygenated Solvents	8.6
213	Hydrocarbon Solvents	544
214	Unspecified Solvents	177
TOTAL		4,230.6

Categories 512 and 513, empty containers, are also recycled by drum reconditioners outside the county. 260 tons of empty containers were disposed of in 1985. No figures are available for recycled containers.

Projected Hazardous Waste Generation Patterns
For Ventura County

Projections for future generation of hazardous wastes were obtained from the questionnaire and audit results of the 75 major generators.

Twelve companies in Ventura County are in the process of installing on-site hazardous waste treatment systems that will reduce the volume of waste they produce in 1986 by 80%, from 4200 tons to approximately 350 tons. Twenty companies were able to recycle or eliminate generation of hazardous waste and will not utilize land disposal in the future. Forty companies surveyed responded that they will continue to rely on land disposal for

hazardous wastes, however, they are looking into waste reduction methods including water conservation, neutralization, recycling, gravity precipitation, dewatering and process variation. Three companies stated that they generate such small quantities of wastes that there are no economically feasible alternatives for their waste.

The projected 16,000 tons of hazardous waste that will be produced in 1986 can be further reduced by 25-35% by treating all liquid waste streams prior to off-site disposal. Liquids can be treated through proven and available technologies such as neutralization, evaporation, precipitation of contaminants, sorption processes, reverse osmosis, ultrafiltration and distillation.

Table IV
PROJECTED HAZARDOUS WASTE GENERATION FOR
VENTURA COUNTY IN 1986

<u>Code</u>	<u>Waste</u>	<u>Estimated Tons/Yr.</u>
111	Acid with metals	150
112	Acid/no metals	75
113	Unspecified acid solution	50
121	pH > 12.5 + metals	1200
122	pH > 12.5 no metals	1000
131	Aqueous solution w/reactive ions	350
132	Metal solution	350
133	Solution with > 10% organics	200
134	Solution with < 10% organics	10
151	Asbestos	50
162	Spent catalyst	3
171	Metal sludge	300
181	Inorganic solids	100
222	Oil/water separator sludge	1000
231	Pesticide rinse water	255
241	Tank bottoms	5000
352	Organic solids	2000
461	Paint sludge	110
521	Drilling mud	2000
611	Contaminated soil	2000
	Total estimated tons	16,203

Conclusion

The results of this survey appear to show that the existing Ventura County industries will, in 1986, begin to reduce the quantity of hazardous waste being disposed of in landfills by

50%. The majority of generators have implemented initial phases of hazardous waste volume reduction and further reduction is a top priority for many.

Oil field wastes, i.e., tank bottoms, drilling muds and some acids will continue to be the major waste streams produced. Many oil companies are having some of their wastes "delisted" or declared a "special waste." Oil companies are using non-hazardous drilling muds and are having tank bottoms tested to see if they are actually hazardous according to the Criteria in Article 11 of Title 22, California Administrative Code. The waste in many instances, will no longer be manifested as a hazardous waste but will still require specialized facilities for handling or disposal.

Other than land disposal, there are few appropriate alternatives for drilling muds, tank bottoms, hazardous solids, sludges and contaminated soil. Stabilization and solidification such as the Chem-Fix process may be used to reduce the mobility of these wastes.

Future liquid hazardous waste streams that will be produced by Ventura County industries are, in order of quantity, alkaline solutions with and without metals, aqueous solutions with metals, acids and organic solutions. There are many proven and appropriate technologies to eliminate the volumes of these waste streams.

The questionnaire results indicate that the major barriers to on-site treatment and volume reduction are: 1) lack of information, 2) financial and 3) regulatory.

The questionnaire and waste audits revealed that several companies were not aware of available recycling opportunities or waste minimization techniques. Information on recycling and waste exchange opportunities has not been made available to all generators. Dissemination of information at the local level appears to provide a solution to this problem.

The confidential nature of waste reduction methods may be significant for waste minimization involving process modifications. While many firms may be reluctant to disclose information about their processes, government, trade associations and the universities could provide and disseminate generic information about volume reduction and feasible alternative technologies for specific waste streams.

Several companies were aware of waste treatment systems that could be installed on-site to treat or recycle their hazardous wastes but lacked the funds to purchase the equipment. The majority of the liquid wastes produced can be treated using proven waste water treatment systems that can cost between

\$25,000 to \$250,000. Very small generators do not produce sufficient quantities of hazardous waste to warrant installation of these systems. Collection and transfer facilities may provide cost effective solutions for this group of generators.

The third major barrier to volume reduction and on-site treatment is a regulatory barrier. Companies reported that they would not consider on-site treatment for their hazardous waste because they did not want to be subject to the strict legal and financial requirements of a Permitted Facility. Several companies, however, stated that they would be interested in on-site recycling or in-line treatment since these processes do not require a Treatment Facilities Permit according to the Department of Health Services.

The current needs of industry as identified by the survey, are to encourage their adoption of existing treatment technologies and volume reduction strategies.

Recommendations

In order to continue volume reduction efforts and to further reduce the dependency on land disposal, the following objectives will be implemented by Environmental Health:

1. Disseminate information to generators, engineers and plant operators on waste reduction techniques and alternatives.
2. Work with individual firms to implement waste reduction methodologies.
3. Encourage industries to share information about waste reduction successes.
4. Identify financial resources and incentives for companies needing more capital intensive technologies.
5. Assist in overcoming regulatory barriers that impede waste reduction efforts.
6. Coordinate with cities and County planning efforts to ensure that new industries coming into Ventura County install best available treatment technologies in order to reduce generation of hazardous waste.
7. Determine collection, storage and transfer station needs of small generators.

References

National Research Council, Reducing Hazardous Waste Generation, Washington, D.C.: National Academy Press, 1985.

Southern California Area Government, The Problems and Needs for the Management of Hazardous Waste in Southern California. Los Angeles, CA 1985.

Noll, Kenneth E., Charles N. Haas, Carol Schmidt and Prasad Kodukula, Recovery Recycle and Reuse of Industrial Wastes. Chelsea, Mich.: Lewis Publishers, Inc., 1985.

California Department of Health Services, Economic Incentives for the Reduction of Hazardous Waste. Los Angeles, CA.: ICF Consultants Assoc., December 18, 1985.

ATTACHMENT C

Draft - 7/17/86

DEMONSTRATING ECONOMIC INCENTIVES FOR HAZARDOUS WASTE SOURCE REDUCTION AND ON-SITE WASTE TREATMENT

Proposal To

U.S. Environmental Protection Agency
and California Department of Health Services

From

Economic Development Corporation of

Los Angeles County

September 1, 1986

DEMONSTRATING ECONOMIC INCENTIVES FOR
HAZARDOUS WASTE SOURCE REDUCTION AND ON-SITE WASTE TREATMENT

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DEMONSTRATING ECONOMIC INCENTIVES FOR
HAZARDOUS WASTE SOURCE REDUCTION AND ON-SITE WASTE TREATMENT

Summary

Small generators pose particular difficulties for effective implementation of emerging federal, state, and local programs of hazardous waste management. They lack access to information about opportunities and methods for reducing the volumes of hazardous wastes they now generate; they lack access to capital to install on-site waste treatment systems and to modify their processes and operations towards source reduction; and they lack sufficient access to information about insurance and liability. The hazardous wastes they generate may pose particularly severe dampers to public health, the environment, and workers.

These needs are particularly evident in Los Angeles County, home to an estimated 17,000 generators of hazardous waste...and locus of innovative new efforts to site new hazardous waste treatment facilities as a way to accelerate the transition away from reliance on land disposal of these wastes. Effective programs of source reduction and on-site treatment increasingly seem an essential prerequisite to success in siting the needed new treatment facilities. Leading environmental groups may agree to support new treatment facilities only when intensive source reduction is pursued first.

As the County's relatively few major generators of hazardous waste implement their own announced source reduction programs, those remaining firms - by far the greatest number of generators - will produce an increasing share of the overall waste volume. Their wastes often represent those most toxic and difficult to handle, as well as the most geographically diverse. Existing regulatory mechanisms will face severe difficulties even dealing effectively with this issue.

The County's on-going program to site and develop off-site treatment and residual repository facilities is aimed at these even more than the major generators. Smaller generators' ability and willingness to use those facilities will depend on their confidence that they can economically control and minimize the volumes they ultimately have to send off-site.

This proposal calls for support of a demonstration project to meet the needs of these smaller generators of hazardous waste both for technical information and capital assistance, as incentives to wide-scale source reduction. Overall management of the project will be provided by the Economic Development Corporation of Los Angeles County. This effort will rely on the combined skills and expertise of the key government agencies in the County, Pooled Loan Marketing Corporation, the University of California Extension Programs, the Hazardous Materials Forum of the California Institute of Public Affairs, together with the Southern California Coalition for Hazardous Materials Management. Outside experts will be brought in as needed.

A project coordinator will work with the Project Management Group to ensure that effective action will be taken within a few months to provide knowledge, impetus, and capital to stimulate new investments in on-site source reduction and on-site waste treatment. The result would set an example for the rest of the County's small generators to emulate.

The benefits of this pilot effort will be a visible reduction in the region's volume of hazardous wastes, facilitating the location and sizing of off-site treatment and repository facilities, and providing tangible evidence of the willingness of the County's industries to assist in solving one of our most pressing local problems.

This demonstration, applicable later elsewhere as well, will undertake the following eight specific steps in Los Angeles County:

1. Provide general information on source reduction and on-site treatment opportunities to several hundred small generators, based on current successful examples.
2. Identify 100 target generators for assistance in a pilot project.
3. Provide technical assistance to these 100 generators, identifying in detail their actual opportunities for source reduction and their needs for on-site treatment.
4. Provide assistance to these 100 generators on ways to mitigate their liability from hazardous waste generation, and thereby increase and improve their options for better insurance protection.
5. Provide financial, management, and business planning assistance to these 100 generators to help facilitate achieving the economic and operational advantages of source reduction and on-site treatment, including payoff return on investment and regulatory compliance.
6. Provide available economical, long-term capital assistance to stimulate investments in source reduction and on-site treatment, and a revolving fund for on-going services subsequent to the demonstration effort.
7. Train project staff from the Economic Development Corporation to continue these efforts after the conclusion of the pilot project.

8. Prepare a final report and summary of lessons applicable elsewhere.

The total capital to be raised for these generators is estimated at between \$10,000,000 and \$30,000,000. This capital would come from institutional investors such as pension funds and bank trust departments and be used by individual generators for state-of-the-art technologies and plant modifications. The overall objectives are mitigating the firms' environmental risks, full compliance with all federal, state, and local hazardous waste requirements, and improving their employment viability and stability.

If extrapolated to an investment in source reduction by only 30% of the County's total industrial waste generators, the total capital requirements ultimately associated with this pilot project could exceed \$75,000,000. At the same time, the County should be able to obtain user commitments for needed off-site hazardous waste treatment facilities and residual repositories, since on-site treatment capabilities will then be identified reliably.

Costs for this effort are preliminarily estimated at \$_____. The demonstration completion target is January 31, 1987. A substantial amount of these costs would be reimbursed to the County in the form of capitalized fees and expenses paid from the loans which the first set of participating waste generators would receive. These reimbursed costs could form a revolving fund to be offered by the County for on-going assistance to other firms beyond the initial 100, as an incentive to broaden and increase source reduction as a standard industry practice throughout the County.

Introduction: Nature of the Problem

Without doubt, effective management of hazardous wastes is an issue as complex as it is controversial. Beginning in California in 1982, and now nationally under the mandates of the 1984 amendments to the Resource Conservation and Recovery Act (RCRA), a shift is underway from land disposal -- the preeminent technique of hazardous waste management of the past -- to waste treatment alternatives. Land disposal of selected categories of particularly dangerous wastes - solvents, strong acids, heavy metals, and so on -- is being phased out. Instead these wastes will be treated on-site, and at off-site commercial facilities. To date, however, this new philosophy has encountered problems of implementation. For a variety of reasons, qualified firms are reluctant to site, develop, and construct the treatment facilities needed if today's remaining landfills are soon to be phased out of existence.

One reason given has been the difficulty in obtaining commitments to use such facilities, and in arranging financing in the face at this lack of user commitments. Waste generators are reluctant to make such commitments, for a variety of reasons. One is liability. A second, however, is that until the generator is satisfied that its own internal capabilities to reduce and recycle its wastes have been exhausted, no economic purpose is served by making a usage commitment to an off-site treatment facility.

The pressures for internal source reduction measures are growing for several other reasons. General comprehensive liability insurance coverage is increasingly conditioned on reduction of risks associated with waste generation and disposal. Lenders and investors in every size of business are concerned about prospective liabilities affecting their loans and investments. Subcontractors' waste management practices are being inspected by aerospace and electronic corporations as part of quality control requirements. Finally, suppliers of industrial chemicals are beginning to promote recycling of their customers' wastes to help assure the viability of their markets, as well as for growing economic opportunities.

Some waste reduction - coupled with on-site treatment (often in the form of recycling) - offers the waste generator promises of economic and other benefits. As is being demonstrated by major manufacturers such as Dow, 3M, Burroughs Corporation, IBM, and Lockheed, improved efficiencies, lower production and material costs, and reduced liability exposure are translated into higher profit margins or better control of costs. Each small business manager will have other considerations to which source reduction will appeal: improved insurability; better return on investment; more reliable operations; and "peace of mind" in a confusing regulatory environment.

One other major potential benefit: source reduction can often be accomplished without additional permits or regulatory action. In many cases, state-of-the-art changes in processes and production equipment or new pollution control modifications can be the vehicle. This often can be accomplished in cooperation with the existing enforcement agencies.

Waste generators are becoming sensitive to this approach, as evidenced by their small but growing focus on source reduction. Hazardous waste is, after all, waste. Its generation reflects an evident flaw in our productive processes. Generating fewer wastes, conversely, means higher productivity. Here too, however, implementation constraints preclude rapid transition to intensified source reduction. As cited in the growing literature on source reduction, the barriers are largely ones of perception and inertia, and not economic or technical.

Small generators of waste pose particular problems. Often they lack knowledge of the rules and regulations which apply to their wastes; they lack access to information about the technologies which may be available to manage these wastes more effectively; they lack trained staff to deal with these issues; they lack scale to use some technologies efficiently; and they lack capital resources to install and operate the necessary new (and, at times, expensive) equipment.

The problems faced by small businesses are even greater in the context of source reduction: reducing the volume of wastes being generated through industrial process changes; installation of new, more efficient equipment for recycling, etc. Increasing costs of hazardous waste disposal are driving firms -- both large and small -- toward new commitments to source reduction. Large firms are especially impelled to lower their rates of waste generation by concerns over liability. To them, millions or even billions of dollars in assets are at stake. Smaller firms, with limited resources, have a more intense problem. Their ability to assume uninsurable liabilities is less and their relative risk is much, much greater. And, because this risk directly impacts the assets and lifelong investments of the owners and managers of those businesses, their incentive to act may be greater. Ignorance and inertia are repeatedly reported as their greatest obstacles to effective action.

Counties like Los Angeles have literally thousands of smaller waste generators who need special assistance. Here, marketplace incentives alone are not sufficient to engender rapid action. Metal finishers and dry cleaners; electroplaters and auto body shops; printed circuit board manufacturers and paint factories --- all need special assistance regarding the regulatory environment, available technologies, and the business opportunities available to them today through achievable steps at waste reduction. And all need access to ready sources of long-term capital to make such investments profitable.

Moreover, an aggressive program of hazardous waste source reduction by small and medium-sized generators is likely the essential prerequisite to siting the hazardous waste treatment facilities needed in Los Angeles County to facilitate the transition away from reliance on land disposal. Investors in such facilities must be able to predict reliably the size of the off-site treatment market. Source reduction and on-site treatment obviously will affect the volume and characteristics of the wastes which generators eventually have to send off-site. Equally important, citizens being asked to approve -- or at least to tolerate -- siting of new hazardous waste management

facilities in their local areas need to feel confident that industry is paying sufficient attention first to source reduction and on-site treatment. That is, people must be assured that they will not be facing an endless procession of siting proposals. In this sense, LA County's innovative efforts in pursuit of hazardous waste facility siting are inevitably intertwined with successful attention to the source reduction opportunities and on-site treatment needs of the County's smaller waste generators.

Another benefit to the County of a successful source reduction program will be a more efficient selection process among candidate sites for off-site treatment. The geographical concentrations of users will become evident, as well as the volumes and characteristics of those wastes, which in many respects can be then considered more as operating process residuals. Since the generators will already have maximized their own efforts to detoxify their wastes, the existence of the facility may be more easily acceptable. Indeed, in a proposal for such a facility on the East Coast, a chemical supplier to waste generators has proved willing to host the project, and operate it under contract for them.

This proposal sets out the structure for a demonstration program to meet the needs of smaller waste generators in Los Angeles County...and in doing so, provides a model applicable elsewhere in the country. Through a careful blending of the skills and expertise and appropriate roles of the county agencies, University of California, the Hazardous Materials Forum of the California Institute of Public Affairs, the Southern California Coalition for Hazardous Materials Management, and Pooled Loan Marketing Corporation, effective action can be taken within a few weeks to provide knowledge, impetus, and capital for new investments in on-site source reduction and on-site waste treatment, and thereby to determine far more accurately than is possible at present the resultant needs for off-site treatment of hazardous wastes being generated today by businesses throughout Los Angeles County.

An Appropriate Response to the Needs of Small Generators
Pooled Loans

The investment banking community is prepared to meet the needs of the thousands of smaller hazardous waste generators with a new program of pooled loans, backed by the Small Business Administration's (SBA) unique Pollution Control Facility Payment Guarantee (PCFPG). This concept is ready to be implemented on a large scale, once a demonstration project provides sufficient impetus in a major market like Los Angeles. Once the program is underway, its own momentum will assure continued self-financing (through a revolving fund tied to the loans themselves).

Typically, commercial banks are unwilling to make loans to smaller firms for investments in pollution control equipment, especially on-site hazardous waste treatment facilities, or for process redesign for purposes of waste minimization. Even when such investments are required to bring the firm into compliance with federal, state, or local regulatory mandates, the traditional banking perspective sees such investments as "non-productive". As a result, banks usually require that loans for such purposes be fully paid back within three to five years. Monthly repayments for a small firm are therefore prohibitive, and the true economic value of the investment is overshadowed by its negative cash-flow implications.

By employing the PCFPG for the bank loans through the Economic Development Corporation of Los Angeles County (EDC), and pooling a large number of smaller loans through the Pooled Loan Marketing Corporation (PLMC), the same banks can make these loans available to smaller generator customers with repayment terms of 10, 15, even 20 years, at fixed rates of interest (identical to a home mortgage). The firm can now compare the economic benefits of its proposal investment against these fixed costs. And it can compare repayment costs to the expense of long-term waste disposal on off-site treatment.

The PCFPG is issued by SBA as a part of a program which the Los Angeles Board of Supervisors has previously unanimously endorsed, and in which the EDC has already been trained. PLMC is the only national, privately owned, public-purpose funding corporation specializing in pollution control and source reduction financing for small businesses. With the Guarantee in hand, a package of loans can be acquired by PLMC with funds raised in the capital markets. At times, indeed, investments in specific pools for firms in Los Angeles County can qualify for purchase by local institutional investors, such as pension funds. In this manner, public or union pension funds can aid both environmental improvement and industrial and economic development in the community.

PLMC's financing arrangements are made by Miller & Schroeder Financial, Inc., which also underwrites its securities. Miller & Schroeder is a leading underwriter of bonds for California local government, and is PLMC's sponsor and affiliate.

So, what does it take to get such a program underway in Los Angeles County? The answer, simply stated: "A series of financing packages and applications from qualified small businesses which now generate hazardous wastes." With a sufficient volume of loan applications in hand, the program can then generate

enough momentum to become totally self-financing. That is, costs of the necessary technical and financial assistance to loan applicants can be built into the loans, providing a revolving fund for the subsequent technical assistance process, and to support the staff requirements of the EDC.

However, startup costs are inescapable at the inception of this new activity, to assist the first discrete set of small firms complete the analyses needed for adequate financial assistance. These will spell out the technologies needed, their costs, and the business advantages associated with such investments. This needed assistance would be provided to smaller firms in Los Angeles County under this proposal.

Specifically, Economic Development Corporation of Los Angeles County is proposing that the California Department of Health Services and the U.S. Environmental Protection Agency support a unique structure of appropriate institutions in providing the technical and financial assistance required by a selected set of smaller firms which generate hazardous wastes. These institutions and their roles are as follows:

- Economic Development Corporation of Los Angeles County will conduct seminars for small businesses, and provide overall management of the technical and financial assistance outreach activities and the effort as a whole.
- Hazardous Materials Forum (California Institute of Public Affairs) and The Southern California Coalition for Hazardous Materials Management will conduct outreach programs through trade associations and chambers of commerce. Their focus will be on providing information on source reduction and available technologies from available literature and other demonstrations, in cooperation with EDC.
- Los Angeles Area Chamber of Commerce will help identify and then help provide specific technical assistance to a set of 100 waste generators in LA County. A technical assistance team will operate under the overall aegis of EDC, coordinated closely with LA County Public Works Department and LA County Sanitation Districts.
- An insurance assistance team will advise these 100 firms on their insurance options and liability risks. This team will be comprised of the independent insurance agents and underwriters serving these firms, including a major insurance brokerage firm with expertise in environmental liability coverage, and the Risk and Insurance Management Society (RIMS).
- A financial assistance team comprised of the EDC, local banks, accounting firms and small business assistance experts will provide specific financial, management, and business planning information for the same set of 100 generators; help prepare financing applications and effect the financing transactions.

- Pooled Loan Marketing Corporation will provide overall guidance to EDC and the overall effort; facilitate guarantee applications with SBA; and obtain commitments from commercial banks and LA County-based pension plans to provide capital for purchase of the loans.
- A Project Coordinator will ensure that all components of this complex effort move forward monthly, on time, to achieve the desired results.

A Demonstration Effort in Los Angeles County

Eight specific steps will to be undertaken in the Los Angeles County demonstration project. These can be summarized as follows.

1. Provide General Information on Source Reduction and On-site Treatment Opportunities Based on Current Successful Examples

Working under guidance from the EDC and the Project Management Group, the Hazardous Materials Forum of the California Institute of Public Affairs, based in Claremont, and the Southern California Coalition for Hazardous Materials Management, will provide a large number of hazardous waste generators in LA County with general information on hazardous waste regulation, opportunities for source reduction, technologies for source reduction and on-site treatment, and the potential for improved company insurability (plus reduction in liability) associated with specific investments in source reduction and on-site treatment.

In this task, the Forum will work closely with such groups as the LA Area Chamber of Commerce, trade associations, and the Extension Programs of the University of California (Irvine and Los Angeles campuses). Special efforts will be made to gain publicity for the overall effort, and thereby gain the attention of the largest possible number of small firms now generating hazardous waste in the county. County records on patterns of hazardous waste generation will be used to identify possible generators.

2. Identify 100 Target Waste Generators for Assistance

Based on this broad initial outreach activity, the Project Management Group will select 100 small generators to receive specific technical assistance, including waste audits. Generators will be encouraged during the outreach activities (Step 1) to submit simple statements of interest through the Chamber of Commerce, trade associations, and so on.

The firms to be selected within the set of 100 must meet the following characteristics as "small businesses":

A Project Management Group will review each major step of the effort, and approve actions proposed by the EDC staff and the Project Coordinator. This group will consist of the following individuals, each a specialist in his/her area:

- Reginald Bottger, President, EDC (Chair)
- James McCall, General Manager, PLMC (investment banking)
- David Morell, Consultant to PLMC (hazardous waste policy)
- Eugene Myers, Vice President, Frank B. Hall & Co. of California (insurance/risk)
- Susan Miller, SRM Applied Environmental, Inc. (waste audits)
- John Schultz, California Environmental Services, Inc. (technology)
- Kieran Bergin, LA County Sanitation Districts (hazardous waste)
- A representative of the Los Angeles Area Chamber of Commerce (marketing)

Generators will be encouraged during the outreach activities (Step 1) to submit simple statements of interest through the Chamber of Commerce, trade associations, and so on. Special contact with Robert Judd, consultant to The City of Los Angeles on small business and hazardous wastes, will be effected.

The firms to be selected within the set of 100 must meet the following characteristics as "small businesses":

- Less than 500 employees in the entire firm, independently owned and managed, and not dominant in its field (SBA size standard)
- in business for at least 5 years (SBA standard)
- profitable for 3 of the past 5 years (SBA standard)
- now operating within Los Angeles County (EDC requirement)

The firms to be selected for this assistance package on a demonstration basis should encompass a range of types; metal finishers, electroplaters, auto body shops, dry cleaners, printed circuit board shops, paint manufacturers, and so on. The intent is to obtain the greatest balance in terms of their hazardous waste profile and their business/financial/insurance characteristics.

3. Technical Assistance to Hazardous Waste Generators

With the group of 100 small company generators identified, the technical assistance team will provide on-site assistance to each firm. Each plant visit will require approximately 4 hours (plus another 4 hours of preparatory and follow-up time, report writing, etc.) for the total of 800 hours of technical time. Overall management will be provided by the EDC, assisted by the Project Coordinator. Activities will be reviewed by the Project Management Group. As appropriate, outside experts will provide training to the specialist resident in the Los Angeles area.

Each of the 100 generators will be visited by technical experts with credibility in the industry. They will review the firm's industrial processes and provide preliminary recommendations to the company on possible steps to reduce hazardous waste generation, or to treat some wastes on-site. In many cases, some of these recommendations will have already been solicited by the business on its own.

Present costs of waste disposal will be identified. A simple waste audit will be conducted: how much waste, of what kind, is being generated? Where in the production process are these wastes being generated? Information will be provided to each generator describing available technologies for waste reduction and on-site treatment. Initial suggestions will include placement of these new items (waste reduction tanks, filters, and so on) within the plant.

Thus each company participating in the project will receive, at no initial outlay except for the time and information the company provides to the technical assistance expert, a basic description of its waste situation and its technical options for action.

4. Insurability/Loss Prevention Assistance to Hazardous Waste Generators

With this technical information in hand, the insurance assistance team will next visit the plant (or interview key individuals by telephone). Again, overall management will be provided by the EDC, assisted by the Project Coordinator and the Project Management Group.

This team will explore the firm's present insurance profile (Comprehensive General Liability, Environmental Impairment Liability, Workers Compensation, other); its basic financial risk profile (under Superfund, other); and possible improvements to its insurability following installation of the recommended technical program of source reduction and on-site treatment already identified. Costs of insurance coverage will be identified, along with the levels of coverage potentially available.

Thus each company participating in the project will receive, at no initial cost except for the time and information the company provides to the insurability assistance experts, a basic description of its present insurance/risk situation and its options for action. The team will also assist firms with their applications to insurance brokers for changes or improvements of coverage.

Based upon the later financing commitment and schedule, plus the construction and installation contracts, the insurance team would subsequently reexamine and reevaluate the new insurable qualities of the generator. A revised liability analysis could be used by company management with the assistance of a risk manager to recommend the extent and type of new insurance coverage. This would be coordinated with the efforts of the independent insurance agents and underwriters in the presentation to casualty insurance carriers.

5. Financial, Management, and Business Planning Assistance to Hazardous Waste Generators

Simultaneously, the financial assistance team, including EDC staff and bankers, will be developing a financial profile and PCFPG package. They will visit with management to review the firm's current financial situation, with special emphasis on its present and projected costs of waste disposal and its overall insurance/liability risks. By taking this action concurrently with the technical assistance, and having an early indication of eligibility for the financing, the company's management will have a higher level of comfort that the technical and insurance recommendations are indeed economically feasible. Again, these activities will be reviewed by the Project Management Group and supervised by the EDC, aided by the Project Coordinator.

The company will then be helped to prepare a tentative business plan incorporating the appropriate components of source reduction and on-site treatment from the technical assistance package, and the insurability components. Costs of new equipment (principal and interest) will be projected for payback over 10 to 20 years, and compared with probable waste disposal costs and risks over that same period. A rate of return on investment will be calculated.

Guided and trained by PLMC's General Manager and Regional Directors and the EDC, the company's management, commercial bank, accountant and attorney will develop a Plan of Financing for the individual project. This plan will detail the tasks, responsibilities, and chronology for submitting the loan application and SBA Guarantee application packages, setting the terms and conditions on the financing, and effecting the actual financing transaction.

Thus, each company participating in the project will receive, at no initial outlay except for the time and information the company provides to the financial, management, and business planning team, a completed loan application and an overall Plan of Financing, relating such expenditures to a rate of return and with confidence that the plan can indeed be executed.

6. Financing and Installing the Projects

Working with the EDC and the company's own commercial bank, PLMC will provide support in the entire financing process, including funding the loan for the bank with a non-recourse purchase at closing. PLMC will raise capital for this funding from a variety of sources, including the general capital markets and local institutions, such as pension funds, insurance companies, and other local investors.

These loans will be made for terms ranging between 5 and 20 years, at fixed rates of interest similar to federally-backed home mortgages, and without either equity from the borrower or risk to the lender. They will range up to \$5,000,000 per company, and can be used for expenses and costs of the source reduction or on-site treatment project, including engineering, waste audits and assessments, equipment, installation, and legal and financing costs. In many instances, site preparation and replacement of underground storage tanks can also be included.

Based on over the past ten years experience by PLMC's management and SBA's operations, the estimated total investment to be financed for the 100 target firms may range between \$10,000,000 and \$30,000,000.

The proceeds of each loan will provide for reimbursement of the costs of the technical assistance already advanced by the County, and the business and financial planning elements of this demonstration project. These include expenses made for the waste audits, engineering, and other professional services provided for the benefit of the business. Some of these costs may also have been laid out by the business, but most may well have been borne under this special program. To the extent that such costs are specific to the development of the project being financed under the new loan, the County would be reimbursed. This step will then generate sufficient financial resources to continue technical, insurance, and business planning assistance activities with another set of waste generators without further external financing. These costs would then be incorporated into the next set of loans...and so on.

For example, each loan will include reimbursement of the cost of assistance initially provided to that generator. This money will be set aside in a revolving fund for continuing assistance activities elsewhere

in Los Angeles County. Costs of follow-up technical assistance to ensure that the new equipment is installed and operating properly, and is achieving the desired results in terms of waste minimization and environmental effectiveness, can also be provided to the first set of generators (loan recipients). Costs for such follow-up services can be built into selected long-term loans.

Equipment would then have to be ordered, installed, and tested. This step may take many months, of course, depending on the types of equipment needed. Permits from federal, state, and local government agencies may also be required: under RCRA, Clean Water Act, or local regulations. Funds for permit processing and environmental assessment may be included as part of the loan.

7. Training of Ongoing Project Staff

As the initial demonstration project with 100 waste generators proceeds, the Project Management Group will supervise training for staff from the Local Development Corporation, the LA County Public Works Department, the County Sanitation Districts, and the UC Extension programs. Members of the group will follow the progress of the project to assist in assuring its completion and implementation.

This training component will start on the first day of the project, and continue through the demonstration/assistance phase. At this point, final training in each step of the effort will be provided to permanent staff of these county agencies. Necessary external consulting services of technical, financial, and insurance experts will be identified. Written materials will be reassessed to ensure their adequacy. The effort will then pass directly into the hands of the Economic Development Corporation for follow-on implementation after the initial demonstration effort has concluded.

8. Summary of Lessons Applicable Elsewhere - Preparation of Final Report

Finally, the Project Coordinator will prepare a final report summarizing what has been accomplished regarding hazardous waste source reduction and on-site treatment for small waste generators in Los Angeles County. This report, to be formally approved by the Local Development Corporation's Board of Directors and the Project Management Group, will serve as the written model for application of this process in other areas of the country.

Summary of Specific Outputs From This Project

By the conclusion of this project, an important series of outputs will have been provided:

- Technical options available to 100 small businesses generating hazardous wastes in Los Angeles County
- Insurance profiles for 100 small businesses generating hazardous wastes in Los Angeles County
- Business and financing plans for 100 small businesses generating hazardous wastes in Los Angeles County
- Completed PLMC financing commitments for 100 or so businesses (some of the 100 may turn out not to qualify for a loan, or may decide not to move forward with the use of available loan funds)
- Installation of the source reduction process changes, and the new on-site treatment systems
- New insurance programs for selected waste generators who qualify
- Training of staff and development of institutions to extend this assistance program to other generators in LA County

During the project itself, an additional set of key products will be developed. These will be useful elsewhere in Los Angeles County during and after the demonstration, and will have general application naturally as well.

- Standard brochures on (1) overall technical assistance procedures and tasks, and waste audits; (2) summary of the business, management, and economic benefits of hazardous waste source reduction, (3) description of the availability of pooled loans (developed for use in the outreach efforts...Step 1)
- Standard check list for waste audits (developed during the technical assistance phase...Step 3).
- Description of typical technologies available for on-site waste treatment and source reduction (developed during Step 3)
- Profile of waste generation patterns for 100 typical LA small generators (developed during Step 3)
- Cost figures for typical technologies, contrasted with typical costs (present and projected into the future) of off-site disposal and treatment (developed during Steps 3 and 5)
- Data on the community's economic benefits from a source reduction/on-site treatment program for small generators (developed during Step 5) -- job retention, financial stability, and economical compliance with regulations to result in increased public confidence in management of hazardous wastes.
- Data on insurance profiles of 100 typical LA small generators (developed in Step 4)

- Information on insurance options based on source reduction/on-site treatment improvements (developed in Step 4)
- Summary of risk mitigation and liability reduction achieved by such investments (developed in Step 4)

Proposed BudgetOutreach Activities (Step 1)

Haz Mat Forum seminars (Rory Kessler et al)	
-15 days x \$400 -	\$
Seminar Expense - technical experts, materials, etc.	\$
Local Development Corp. staff - 10 days x \$400	\$
Printing and Mailing - EDC - LARCC	\$
Travel (by Morell, McCall, etc.) - \$500	\$
Promotional Luncheons - EDC - LARCC	\$

Identify 100 Generators (Step 2)

Overall project team, 4 days x \$750	\$
Travel	\$
Market Research - LARCC	\$

Technical Assistance (Step 3)

Schultz and Miller (60 days at \$600)	\$
Others (40 days at \$400) - \$	\$
LA County staff...no cost to contract	\$
Travel	\$

Insurability Assistance (Step 4)

Provided by *	\$
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Financial, Management, and Business Planning Assistance (Step 5)

EDC staff and other local talent (20 days at \$400)	\$
Travel	\$
Computer and other analytical services	\$

Processing of Loan Applications (Step 6)

EDC Staff - 65 days x \$400	\$
PLMC provided *	\$

* These services may be provided on contingency that the insurance specialists and PLMC offer their services on their normal fee schedules and that they are retained as contractors to the Project. Note: PLMC contemplates an Agency arrangement with EDC whereby EDC receives a fee for for originating loans which PLMC purchases.

Staff Training (Step 7)

Morell (2 days at \$750)	\$
Schultz (3 days at \$600)	\$
Miller	\$
Others (2 days at \$400)	\$
Travel	\$

Summary of Lessons Applicable Elsewhere - Final Report (Step 8)

Morell (4 days at \$750)	\$
Schultz (2 days at \$600)	\$
Others (2 days at \$400)	\$
McCall... *	\$
Insurance specialists*	\$

Overall Project Management

Project Coordinator	\$
Morell (5 days at \$750)	\$
EDC Staff (10 days at \$400)	\$
McCall *	\$
Other members of the Project Mgmt. Group	\$

Overhead, typing, copying, express mail	\$
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TOTAL BUDGET

* see note on preceding page

Proposed Schedule

This overall demonstration effort in Los Angeles County can be completed within six months of its inception (hopefully, we can start by August 1, 1986). Detailed schedule estimates are as follows:

<u>Steps/Tasks</u>	<u>Months</u>
1. Outreach	August 1 - September 15
2. Identify	September 15 - 30
3. Technical	October 1 - November 30
4. Insurability	October 15 - December 31
5. Business and Financing Plans	October 1 - November 30
6. Loan Processing	October 1 - December 31, 1986
7. Staff Training	January 1 - January 31, 1987
8. Summary	January 1, 1987 - January 31, 1987

Capabilities of Project Team

Here we need to present a one-paragraph summary of the qualifications of each of the members of the project team, plus cv's attached to the proposal.

Recommendations From The Report
To The Board Of Supervisors By
The Contra Costa Hazardous Waste Task Force

FROM CONTRA COSTA COUNTY

10. Provide strong direction and support to and require strong direction and support from departments involved in actively enforcing laws and regulations concerning permit issuance, inspection, compliance, and data collection relating to the generation, storage, transportation, treatment and disposal of hazardous waste, and to the storage or transportation of hazardous materials.

Subcommittee on How Best to Dispose of Hazardous Waste

11. Accept the responsibility to plan for the appropriate, safe, and responsible disposal of hazardous waste generated within the County, acknowledging, however, that even with the most advanced alternative technologies, there will be some waste residues for which secure landfill disposal will be required.
12. Oppose activation of any new hazardous waste landfills or surface impoundments not currently in use unless approved as a part of an overall hazardous waste management plan which meets all existing statutory requirements. In this regard, develop a phased plan for reducing the number of hazardous waste landfill and surface impoundment disposal sites.
13. Establish a goal of allowing no future increase in the 400,000 tons of hazardous waste currently disposed of annually in Contra Costa County (except for new amounts resulting from broadened definitions of what constitutes a hazardous waste and new waste volume resulting from major clean-up activities).
14. Encourage decreasing the volume and toxicity of hazardous waste requiring disposal through increased recycling and treatment efforts and the development of new treatment technologies.
15. Establish a target of reducing by 25% the volume and toxicity of hazardous waste committed to land disposal by 1990 using the amount disposed of in calendar year 1984 as a base from which to measure. In order to achieve this goal, the Board of Supervisors should request all industries in the County which presently generate hazardous waste to submit plans by December, 1986 for accomplishing reductions in their own hazardous waste and a description of reductions that have been made since 1984. The Board thereafter should monitor implementation of these plans. The commission

15. (continued)

recommended by our Task Force should be charged with the responsibility of refining subsequent goals for reduction in land disposal based upon more accurate information from data base development and the plans submitted from industry.

16. Recognize that while the improper dumping of hazardous wastes is illegal, there are circumstances where reuse or recycling are not feasible, and that it may be appropriate to encourage municipal sewer systems to accept the discharge of aqueous by-products from on-site treatment processes as long as the by-products meet all appropriate discharge standards and where appropriate pre-treatment safeguards and monitoring standards are in force.
17. Encourage development of and actively support alternative methods of hazardous waste management which demonstrate a reduction in relative risk to human health and the environment using calendar year 1984 as a point against which to measure reductions in relative risk.
18. Require relative risk assessment evaluations as a part of the CEQA process of permitting by public agencies for alternative technologies proposed by existing industries and for new industries which plan to treat, store, or dispose of hazardous waste. The relative risk assessment should compare the relative risk of proposed technology to current operations, evaluate alternatives and assess cumulative risks from all similarly proposed facilities. A relative risk assessment should be required of alternative technology projects and new facilities unless the project incorporates technology that has been acknowledged by public authorities as being capable of reducing relative risk, and which has been previously evaluated through a relative risk assessment process. The County shall request all permitting agencies to require a relative risk assessment evaluation to be incorporated into any CEQA process review of a proposed project.
19. Encourage appropriate statewide agencies/entities to develop model relative risk assessment methodologies. Until such a statewide model relative risk assessment methodology is available, develop an outline for an appropriate local relative risk assessment approach.

- (c) All records required by this Section shall be maintained by the person or business keeping them for a period of not less than five (5) years. These records shall be made available to the Health Officer upon request during normal working hours and with reasonable notice.

PART IV

HAZARDOUS MATERIALS MANAGEMENT PLAN

11.37.300 THE HAZARDOUS MATERIALS MANAGEMENT PLAN. Each applicant for a Permit pursuant to this Chapter shall file a written plan, for the Health Officer's approval, to be known as a Hazardous Materials Management Plan (HMMP), which shall demonstrate the safe handling and control of hazardous materials. The Standard Form HMMP as set forth in Section 11.37.310 must be filed unless the user qualifies to file a Short Form HMMP pursuant to Section 11.37.320. The HMMP may be amended at any time with the consent of the Health Officer. Those hazardous materials users that frequently initiate significant changes, as defined in Section 11.37.050 and referred to in Section 11.37.400, in the handling of one or more hazardous materials should indicate that information in the plan, or file an amended plan in connection with each significant change. The HMMP shall be a public record, except for items designated as trade secrets in accordance with the provisions of Section 11.37.430 and except for information contained in the General Facility Description and the Facility Storage map or line drawing of the facility, as herein provided.

11.37.310 STANDARD FORM HMMP. The Standard Form HMMP shall consist of the following:

(a) Facility Information:

1. General Information. The Standard Form HMMP shall contain the name and address of the facility and business phone number of applicant, the name and titles and emergency phone numbers of the primary response person and two alternates, the number of employees, number of shifts, hours of operation, and principal business activity.

2. General Facility Description.

(i) The Standard Form HMMP shall contain a map drawn at a legible scale and in a format and detail determined by the Health Officer. It shall show the location of all buildings and structures, chemical loading areas, parking lots, internal roads, storm and sewer drains, and shall specify the uses of adjacent properties.

(ii) The Health Officer may also require information as to the location of wells, flood plains, earthquake faults, surface water bodies, and/or general land uses (schools, hospitals, institutions, residential areas) within one mile of the facility boundaries.

3. Facility Storage Map.

(i) The Standard Form HMMP shall contain a Facility Storage Map at a legible scale for licensing and enforcement purposes. The information in this section is provided for purposes of ensuring the suitable and secure storage of hazardous materials and for the protection and safety of emergency response personnel.

(ii) The Facilities Storage Map shall indicate the location of each hazardous materials storage facility, including all interior, exterior and underground storage facilities, and access to such storage facilities. In addition, the map shall indicate the location of emergency equipment related to each storage facility, and the general purpose of the other areas within each facility.

(iii) For each storage facility, the map shall contain information as prescribed below, except that where the hazardous material being stored is a trade secret as defined in Section 11.37.430, it shall be identified in a coded manner (together with its key) and not in a manner which would reveal trade secret information:

(1) A floor plan to scale and the permit quantity limit.

(2) For each hazardous material the general chemical name, common/trade name, major constituents for mixtures, United Nations (UN) or North American (NA) number, if available, and physical state.

(3) For all hazardous materials, including wastes, stored in each storage facility, the hazard class or classes and the quantity for each such class.

(4) For tanks, the capacity limit of each tank, and the hazardous material contained in each tank by general chemical name, common/trade name, major constituents for mixtures, United Nations (UN) or North American (NA) number, if available, and physical state.

The Facility Storage Map shall be updated annually or whenever an additional approval is required for the facility.

(b) Hazardous Materials Audit. Hazardous materials users shall provide the Health Officer, and themselves, with a hazardous materials audit of each process using a hazardous material or materials. The audit shall include:

1. A list of all hazardous materials that will be stored, produced or used in production, assembly and cleaning processes (a copy of the Hazardous Materials Disclosure Form as provided in Part IV herein may satisfy the requirements of this subparagraph);

2. Estimates of the type and volume of hazardous materials that will be incorporated into final products, discharged into the sewer, released into the air, or transformed into hazardous wastes; and

3. A description of the methods to be utilized to ensure separation and protection of stored hazardous materials from factors which may cause a fire or explosion, or the production of a flammable, toxic, or poisonous gas, or the deterioration of the primary or secondary containment.

(c) Control of Emissions, Discharges and Releases. The Standard Form HMMP shall indicate the measures employed to control emissions, discharges and releases of each hazardous material, by:

1. Showing that the user has a permit or license from the appropriate regulatory agency.

2. Explaining how the user adheres to existing laws, statutes, standards or regulations that do not require a permit or license, but do specifically cover the handling of each hazardous material and specifically require its control.

3. Documenting measures that will be employed to control the hazardous material in such a manner as to present the least acute or chronic hazard or risk to public health, and/or least damage to the environment, including, but not limited to:

(i) The best available control technologies, practicable, or

(ii) Changes in process and manufacturing strategies to eliminate, minimize or reduce handling of the hazardous material.

4. Demonstrating the adequacy of:

(i) Contingency plans for spills and unauthorized emissions, discharges and releases of the hazardous material; and,

(ii) Employee training and equipment for proper handling of hazardous materials, and in response to all emergencies involving the hazardous material.

5. Upon a showing the environmental fate of the hazardous material handled is such that it presents no harm or potential of harm to human health or to the environment, the HMMP need not indicate the measures employed to control emissions, discharges, and releases of each hazardous material.

(d) Monitoring Plan. For each hazardous material used, the user shall document the efforts to verify that the hazardous materials will be controlled in accordance with all other elements of the HMMP:

1. These efforts shall include, but are not limited to:

- (i) Sampling of emissions discharges and releases;
- (ii) Self-inspections of storage, manufacturing, and transportation operations; and
- (iii) Testing of emergency procedures.

2. These efforts shall take place in such a manner as to:

- (i) Include sampling, self-inspections and monitoring at those times during the production process when the highest volume discharges and the highest probable concentrations of hazardous materials are likely to occur;
- (ii) Monitor, inspect or sample all hazardous materials used in the manufacturing process which have any potential for appearing in wastewater discharge; and,
- (iii) Include periodic random sampling, monitoring or inspection.

(e) Recordkeeping Forms. The Standard Form HMMP shall contain an inspection check sheet or log designed to be used in conjunction with routine inspections. The check sheet or log shall provide for the recording of the date and time of inspection and, for monitoring activity, the date and time of any corrective action taken, the name of the inspector, and the countersignature of the designated safety manager for the facility or the responsible official as designated in the HMMP.

11.37.320 SHORT FORM HMMP.

(a) Any user handling, at any one time, an aggregate amount of less than 500 pounds of solids or 55 gallons of liquids or 200 cubic feet of a gaseous material at standard temperature and pressure, of a product or formulation containing a hazardous material may opt to file the Short Form HMMP unless the Health Officer has provided notice that he or she has lowered the weight or volume limits for a specific hazardous material to protect the public health.

(b) The Short Form HMMP shall consist of the following:

1. The Short Form HMMP shall contain the name and address of the facility and business phone number of applicant, the name and titles and emergency phone numbers of the primary response person and two alternates, the number of employees, number of shifts, hours of operation, and principal business activity.
2. The Short Form HMMP shall contain a simple line drawing of the facility showing the location of the use or storage facilities and indicating the hazard class or classes and physical state of the hazardous materials being used or stored and whether any of the material is a waste.
3. The Short Form HMMP shall also indicate the use and/or storage of any quantity of any carcinogen or reproduction toxin as defined in this Chapter.
4. Information indicating that the hazardous materials will be stored in a suitable manner and that they will be appropriately contained, separated and monitored.
5. A description of adequate contingency plans for spills and unauthorized emissions, discharges, and releases of the hazardous material and, employee training and equipment for proper handling of hazardous materials, and in response to all emergencies involving the hazardous material.
6. Assurance that the disposal of any hazardous materials will be in an appropriate manner.

(c) Any user filing a Short Form HMMP pursuant to this section shall also maintain a recordkeeping form upon which any repair of a storage container or facility shall be noted. The recordkeeping form shall be maintained at the facility and shall be subject to review by the Health Officer.

11.37.330 ADDITIONAL INFORMATION. In addition to the Hazardous Materials Management Plan, the Health Officer may request whatever additional information he/she deems necessary to protect the public health. The additional information that must be provided upon request by the Health Officer may include, but is not limited to, the following:

- (a) Diagrams showing the flow of all hazardous materials through each step of any production, assembly or cleaning process;
- (b) Diagrams and descriptions of all processes that produce wastewaters, air emissions, or hazardous wastes;

(c) Diagrams and descriptions of all treatment processes for hazardous materials, including information on their efficiency in removing or destroying hazardous contaminants; and

(d) A description of the methods to be used to eliminate or minimize the use of hazardous materials at the proposed facility and in the proposed processes, including a discussion of alternative processes which could be used to eliminate or minimize the use of hazardous materials and a justification for selection of the processes proposed to be used, if the processes proposed do not provide for the maximum possible elimination or minimization of the use of hazardous materials.

PART V

HAZARDOUS MATERIALS DISCLOSURE FORM

11.37.400 FILING OF A HAZARDOUS MATERIALS DISCLOSURE FORM.

(a) Any user required to file a Standard Form HMMP pursuant to Section 11.37.310 shall submit a completed disclosure form to the Health Officer by January 1 of each year.

(b) In addition, any such user shall file an amended disclosure form detailing the handling and other information requested on the form within 60 days of any:

1. Significant change in the handling of a hazardous material;
2. New handling of a previously undisclosed hazardous material;
3. Change of business address;
4. Change of business ownership; or
5. Change of business name.

11.37.410 CONTENT OF THE DISCLOSURE FORM. The disclosure form shall include the following:

(a) Identification information, including but not limited to name, address and assessor's parcel number.

(b) A copy of the MSDS for every hazardous material used by the person or business completing the disclosure form unless the MSDS has been previously filed pursuant to the requirements of this Chapter or does not exist.

(c) A listing of the chemical name, any common names, hazard class and the CAS number and/or UN/NA number of every hazardous material handled by the person or business completing the disclosure form;

APPROACHES TO SOURCE REDUCTION

Practical Guidance from Existing Policies and Programs

BY
THE ENVIRONMENTAL DEFENSE FUND

2606 Dwight Way
Berkeley, CA 94704
(415) 548-8906

June 1986

APPROACHES TO SOURCE REDUCTION

The following information is intended to provide a general overview of the various approaches to source reduction that are currently being used by local governments. It is not intended to provide a detailed description of any one approach, nor is it intended to provide a comparison of the relative merits of the various approaches. The information is intended to provide a general overview of the various approaches to source reduction that are currently being used by local governments.

Practical Guidance from Existing Policies and Programs

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BY

THE ENVIRONMENTAL TOBACCO PARTNERSHIP

1998
Berkeley, CA 94704
(415) 525-5000

June 1998

The following information is intended to provide a general overview of the various approaches to source reduction that are currently being used by local governments. It is not intended to provide a detailed description of any one approach, nor is it intended to provide a comparison of the relative merits of the various approaches. The information is intended to provide a general overview of the various approaches to source reduction that are currently being used by local governments.

Executive Summary

This report provides guidance to practical actions that can be taken, by government, with the goal of reducing the production of hazardous wastes at their source. The emphasis throughout is on practical implementation of source reduction measures, rather than on source reduction theory.

The contents of the report are drawn from efforts already underway in various states and localities, and from proposals for concrete additions to existing programs. Material from twenty states is included. The report presents and uses a systematic framework for source reduction activity, in which specific measures are classified and from which a comprehensive program can be designed.

The report uses a functional definition of source reduction, which includes off-site recycling but does not include dewatering, incineration, or other forms of treatment. The criterion is whether a particular activity reduces the number of toxic molecules that ultimately are left over from production processes, and must be treated as waste.

The report sets out eight main elements of source reduction activity, each in a separate chapter. The importance of a comprehensive approach, and the relationship of the various elements to one another, is stressed throughout.

In addition to discussion in the text, the report includes a list of contacts in the various states, including telephone numbers; extensive statutory citations; and a substantial bibliography.

At the level of theory, nearly everyone is in favor of source reduction. Yet in practice, little is being done. The goal of this report is to make the practical parts of the job easier. It provides reference to groundwork and experience that already exists, in the hope that future source reduction initiatives can take advantage of what has already been tried. And it provides an overall framework, again from a practical standpoint, in the hope that approaches to source reduction can be made more systematic and comprehensive.

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Introduction

The purpose of this report is to provide guidance to practical actions that can be taken, by government, with the goal of reducing the production of hazardous wastes. The emphasis throughout is on practical implementation of source reduction measures, rather than on source reduction theory.

The report presents and uses a systematic framework for source reduction activity, in which specific measures are classified and from which a comprehensive program can be designed. The contents of the report, at every point in the framework, are drawn from efforts already under way in various states and localities, and from proposals for concrete additions to existing programs. By assembling this material, we hope to make it easier for policy makers and practitioners in the field to find source reduction activities that will work, and to make them succeed. An analytic framework, we hope, will make it easier to develop approaches that are systematic and comprehensive.

Source reduction is a highly attractive concept. If less hazardous waste is created, then all of the problems associated with hazardous waste—including cost—are lessened. As traditional hazardous waste regulation continues to tighten, traditional disposal will become increasingly

expensive and burdensome. The source reduction strategy offers at least a partial way out.

Even defining what source reduction is, however, can be an obstacle. This report uses a practical definition: "source reduction" covers any technique by which the amount of hazardous substance that is imposed on society's waste-handling capacities is reduced. Under this definition, "recycling/recovery" is included as a source reduction technique (and potentially a major one). Recycling cuts down on the amount of hazardous material that permanently leaves the production process, and must therefore be coped with as hazardous waste. On the other hand, waste incineration is not included. Incineration, like land disposal, is one option for coping with hazardous waste, but only after the material has irrevocably become part of the hazardous waste stream. Nor is dewatering included within this definition of source reduction. Dewatering may substantially reduce the volume of what is legally classified as "hazardous waste," but it does not reduce the number of toxic molecules in the waste stream. A fuller discussion of the definition of source reduction, including a list of physical techniques and a list of implementation strategies, is included below in this introduction.

The factual contents of this report are drawn from source reduction efforts and program designs that are already in existence, either as government programs or as proposals. The primary examples are from those state governments that have attempted some form of source reduction initiative, however incomplete or fragmentary. The principal states are listed in Table 1. Such government leadership as exists in the practice of source reduction has tended to come at the state level, rather than from the federal government, despite the existence of some mandate for source reduction

TABLE 1

SOURCE REDUCTION PROGRAMS AND PROPOSALS
(by state)

California

Florida

Georgia

Illinois

Iowa

Louisiana

Maryland

Massachusetts

Michigan

Minnesota

New Jersey

New York

North Carolina

Ohio

Oregon

Pennsylvania

Tennessee

Texas

Washington

Wisconsin

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New York

North Carolina

Ohio

Oregon

Pennsylvania

Tennessee

Texas

Washington

Wisconsin

in federal law. However, the subject is rapidly attracting federal attention as well.

The existence of various state programs does not mean that there exists any consensus as to how source reduction should be approached. Nor is there any one model program to which would-be imitators can be referred. Instead, it is necessary to sift through the existing experience, fragmentary as it is.

The systematic framework for source reduction activity that is set forth in this report is intended to make it easier to design new programs, and to evaluate existing ones. Every element in the framework laid out in this report is based on an existing element in the source reduction effort of at least one governmental entity, so that at least some practical experience is available at each point. Where we have found that the experience is negative, we have said so. However, it is important to emphasize that the existence of a legal structure for a particular activity, as reported here without negative comment, does not necessarily indicate that the authorized activity is in fact a success in the field. This report draws on those statutes and regulations that have been enacted, and on those programs that have been reported. The degree of actual success, both in administrative terms and in terms of effective source reduction, varies considerably from case to case.

The one certainty in any discussion of source reduction is that today's experience and wisdom will shortly be out of date. The subject is rapidly attracting more study, and important new data are accumulating. Any status report is therefore necessarily tentative (and indeed, one of the perils of producing a report such as this is that some information will be obsolete before the report can be issued). Those in the source reduction field therefore find themselves trying to keep up through frequent personal contact

with each other. To include the serious reader in that process, a list of knowledgeable contacts in the various states, including telephone numbers, is presented in an appendix at the end of this report. A bibliography of published material is also included.

Particularly in light of the potential for rapid change, the reader should look to this report as much for its framework in approaching source reduction, which is presented here for the first time, as for the details of specific existing programs. See "How to Use This Report," below. The framework presented here is intended to be comprehensive.

From the perspective of an overall framework, a few key themes are evident. No single mechanism by itself creates effective source reduction in practice. Integration of various elements is essential. One example—often neglected—is the indispensability of solid data on hazardous waste sources and reduction potentials, data which are normally not available from traditional hazardous waste regulatory activities. Another key theme is the importance of early targeting: choosing a few promising pieces of the problem, and implementing actual reduction efforts for those. Then, of course, early experience is fed back into continuing program design, expansion, and improvement.

Practical considerations such as these, and the need for an organizing framework, have largely been ignored in the source reduction literature to date. One main purpose of this report is to help fill the gap. A noteworthy exception to the general neglect of systematic analysis is the manuscript by David W. Allen, "State Programs in Waste Reduction," submitted to the U.S. Congress' Office of Technology Assessment in March 1986 as background for

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OTA's forthcoming report entitled Waste Reduction for Pollution Prevention and Industrial Efficiency.*

As environmentalists, we cannot help but note that source reduction has very large potential benefits for the environment and human health. From this perspective, keeping hazardous waste from being produced in the first place is preferable to any other waste management strategy, including even the most thorough and technologically advanced forms of hazardous waste treatment. Source reduction may offer unique political advantages as well; it can be in everyone's interest, manufacturers' as well government's and the public's, to minimize chemical waste. Preliminary anecdotal evidence suggests that, in at least some important instances, it may be economically beneficial to all concerned as well.

Based on our experience, it appears that one important obstacle to the widespread implementation of source reduction activities is simple human inertia. To overcome this, a practical approach and the accumulation of practical experience would seem to be vital. Government has the ability to play a major role in stimulating and providing that experience. Ultimately, however, the primary actors in source reduction should be the waste generators themselves. Although this report focuses on government programs, it assumes that government's role should be thought of as transitional rather than permanent. It also assumes that no one source reduction plan, no matter how comprehensive, will be appropriate under all circumstances, and therefore that

* As part of an investigation of source reduction potential in the industrial sector, one chapter in the forthcoming OTA report reviews state efforts. The Allen manuscript was submitted as background for that chapter. The OTA report addresses only the industrial sector, and uses a definition of "source reduction" that excludes recycling activity. EDF staff served on OTA's advisory panel for the report.

a diversity of approaches at the state and local level will continue to be valuable.

The major elements of the framework presented in this report are as follows.

The first element in a source reduction program is an official policy commitment (Chapter I). This need not be in detailed form. The second element is an extensive, multi-part data gathering effort (Chapter II), which continues past early targeting and early applications. At an appropriate point in the data gathering process, an action plan is drafted (Chapter III).

The remaining five chapters of the report are devoted to issues of implementation and specific program components. Chapter IV discusses the choice of institutional structure, with several different options. Chapter V focuses on practical issues in early targeting: pushing ahead with implementation in specific areas while data gathering and planning continue to proceed on a broader front. Chapter VI discusses the variety of methods for providing technical assistance to waste generators. Chapter VII discusses methods of increasing the positive financial incentives for waste generators to adopt effective source reduction measures. Chapter VIII covers the existing regulatory context, and ways in which it can be used and adjusted in order to promote greater source reduction activity.

How to Use this Report

Once the reader is generally familiar with the thrust and purpose of this report, the detailed Table of Contents can be used to find discussion on any specific element or type of source reduction activity, including citations to examples in specific states. If further information is desired on any one

example or set of experiences, the reader can then check the List of Contacts at the end of this report, and write or telephone the key people involved. The contact list is arranged by state.

The Table of Contents is also intended to serve as an outline of the analytic framework that the report presents. By consulting it, the reader can clearly see the arrangement of categories and topics, and the classification of individual subjects. Alternatives to a particular option, and potential gaps in a particular proposed approach, can be checked at least cursorily from the Table of Contents alone.

A Functional Definition of "Source Reduction"

As discussed above, this report defines source reduction from a practical and functional viewpoint to include those measures that reduce the amount of hazardous substance that is imposed on whatever system society sets up for coping with its hazardous waste. This would include not only a lesser amount of toxic substance going into landfills or other ultimate repositories, but also a lesser amount required to go into waste treatment facilities. In short, source reduction aims to reduce the amount of hazardous substance that is left over from the process of producing useful goods and services. In this sense it is a form of increased chemical efficiency. The term "chemical conservation" has been suggested as a synonym.

Another term often used in this context is "waste reduction." However, "waste reduction" implies that waste is being acted upon after it has irrevocably become waste, e.g. by incineration or other treatment. The use of the term "source reduction" makes it clear that what is meant is activity

that goes back to the source, and reduces the amount that becomes waste in the first place.

In physical terms, there are several types of techniques for reducing the sources of hazardous waste. These are listed in Figure 1. The methods are arranged in hierarchical order, with the lowest environmental/health impact (in theory) at the top and the greatest potential impact (in theory) at the bottom. For example, on-site recovery and reuse is theoretically preferable to off-site recycling (because, all other things being equal, less transportation means less risk of exposure). The dotted line indicates the cut-off for purposes of defining source reduction; only those methods above the line are considered "source reduction" for purposes of this report. This hierarchy does not necessarily reflect practical or economic preferences; it is expressed solely in terms of potential risks to the environment and/or human health.

In terms of implementation, there are several types of potential strategies which might be used, principally by government, in seeking to increase the actual use of source reduction techniques. These strategies are set forth in Figure 2, also in hierarchical form. The strategies in Figure 2 are arranged in order of intrusiveness into the freedom of private waste generators, with the least intrusive at the top and the most intrusive at the bottom. The strategies shown below the dotted line, in brackets, are traditional waste management strategies which may well have an indirect effect in stimulating source reduction activity, by making waste disposal more difficult or expensive. However, only those strategies above the dotted line are considered "source reduction" for purposes of this report. Again, this hierarchy of strategies does not necessarily reflect practical preferences; it

is arranged only in order of intrusiveness by government into private activity.

About the Environmental Defense Fund

The Environmental Defense Fund is a national not-for-profit organization with approximately 50,000 members. It has a professional staff of scientists, economists, lawyers and other professionals, with offices in New York City; Washington D.C.; Berkeley CA; Boulder CO; and Richmond VA. Founded in 1967, EDF addresses and seeks solutions for a full range of environmental issues using an interdisciplinary approach. Major program areas include toxic chemicals; water resources and land use; energy and air quality; and wildlife and habitat protection. EDF's focus on toxic chemicals, including chemical management and disposal of toxic wastes, dates back to its founding. Since then it has maintained a consistent major presence on issues of federal, state, and local controls for toxic chemicals, including cleanups under Superfund and regulation of hazardous waste disposal under the Resource Conservation and Recovery Act.

FIGURE 1

Types of Physical Techniques for Source
Reduction and Waste Management

Product Substitution

(shift to product that results in lower hazardous waste output)

Input Substitution

(shift to less toxic input)

(shift to input that results in lower hazardous waste output from same product)

Process Modification

(lower hazardous waste output from same product and same types of inputs)

- redesign
- improved "housekeeping"

Recovery & Reuse (on-site)

(lower net output of waste material)

Recycling & Reuse (off-site)

- shared central facilities
- third party recyclers
- waste exchanges

Treatment

- neutralization
- stabilization
- evaporation ("dewatering")
- incineration

Disposal

- residuals repositories
- surface impoundments
- landfills
- deep-well injection
- ocean dumping

FIGURE 2

Types of Implementation Strategies for Source
Reduction and Waste Management

Research

- recycling
- process modification
- market research

Public Information/Education

Planning

Institutional Assistance

- information clearinghouse
- waste exchange

Technical Assistance

- engineering
- information
- audits

Economic Incentives

Regulatory Incentives

Mandatory Standards

- limits on waste production
- process design requirements

[Liability]

[Restrictions/Regulations for Disposal]

[Prohibition of Disposal]

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